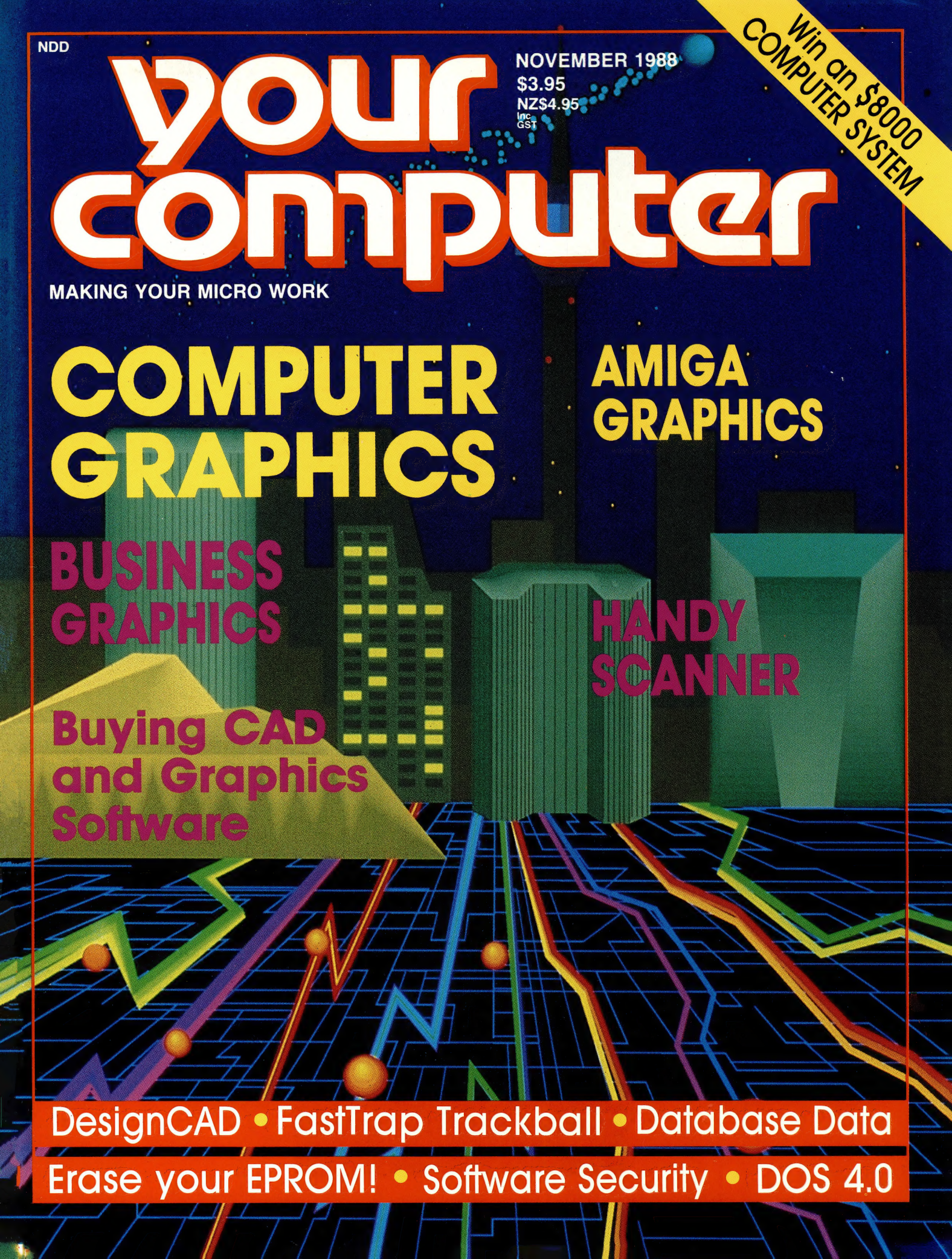


NDD

your computer

MAKING YOUR MICRO WORK

NOVEMBER 1988
$3.95
NZ$4.95
Inc GST

Win an $8000 COMPUTER SYSTEM

COMPUTER GRAPHICS

AMIGA GRAPHICS

BUSINESS GRAPHICS

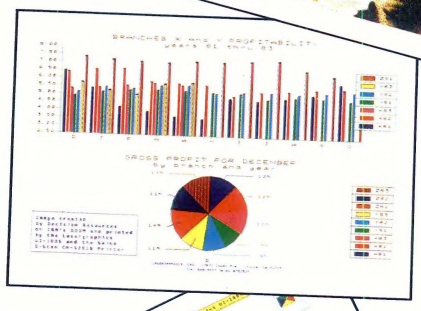
HANDY SCANNER

Buying CAD and Graphics Software

DesignCAD • FastTrap Trackball • Database Data

Erase your EPROM! • Software Security • DOS 4.0

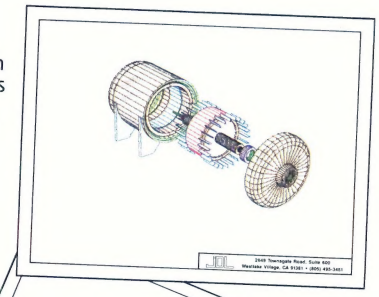
People Prefer Perfect Pictures



Autoshade facility when used in conjunction with TCG's number nine range of graphics boards, for 3D solid modelling and shading

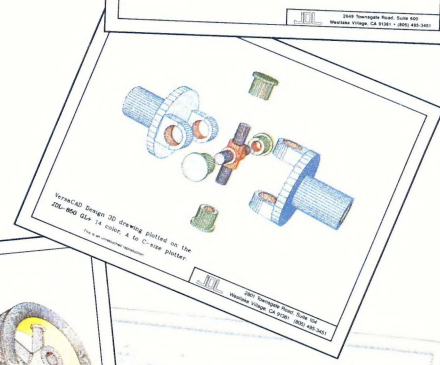
JDL A2/A5 Engineering Workstation Plotter/ Printer

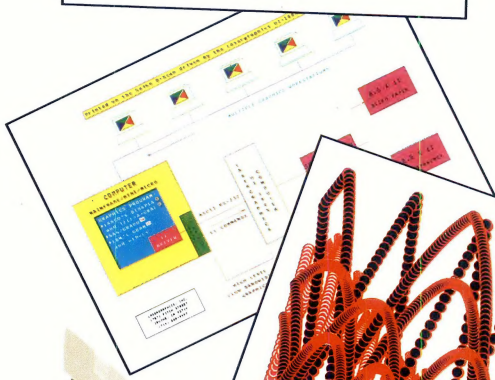
- ☐ 14 clear colours
- ☐ 180 dots per inch resolution
- ☐ Prints 5 times faster than conventional pen plotters
- ☐ HP emulation
- ☐ A large range of printer emulations including Epson, Diablo 630 etc.

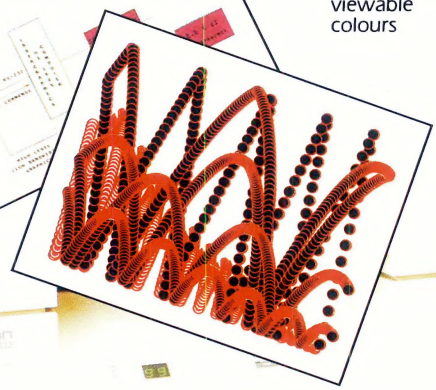


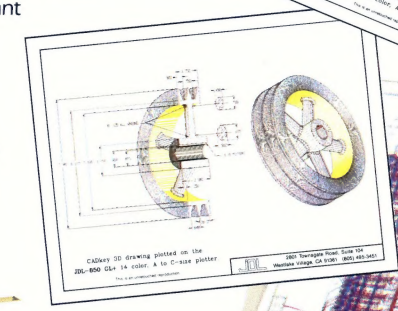
Seiko A3 & A4 Colour Hard Copy Device

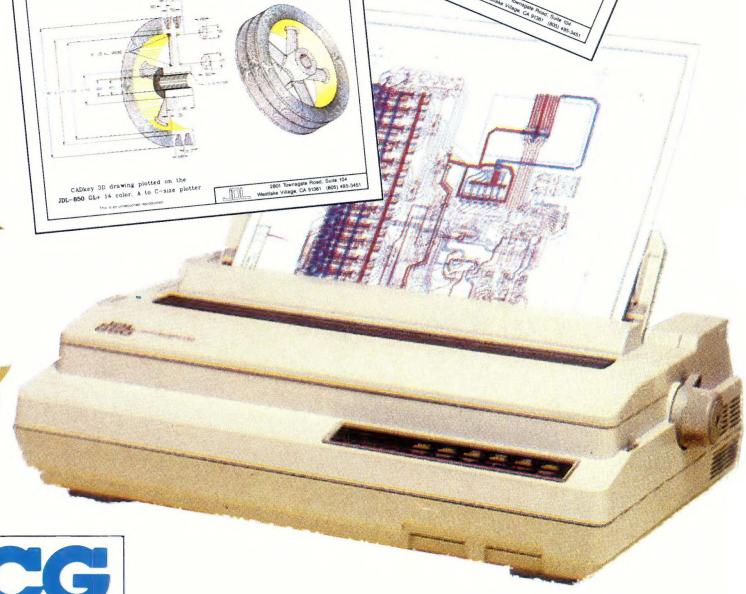
- ☐ High resolution, high quality output
- ☐ Produces final output in less than 60 seconds
- ☐ 4,912 brilliant viewable colours











A full range of leading name graphics products – pen plotters, digitisers, graphics boards, monitors and scanners

TCG

WE'VE GOT THE PICTURE

30 Balfour Street, Chippendale NSW 2008 Phone: (02) 699 8300 Telex: AA20024 Fax: (02) 698 1399 · Adelaide (08) 362 9002 · Brisbane (07) 368 3522 · Melbourne (03) 646 5411 · Perth (09) 474 1966 · Singapore (65) 224 1333

In modems, you'll find NetComm stacks up better than the rest.

When it comes to ours or theirs, only NetComm has a modem to suit every communications need.

MODEL	DESCRIPTION	FEATURES	BAUD RATES
CM400	Modem 64/128®	AD, PD, AX, OA, SW, ASY. Commodore® Compatible	300 FDX, 1200/75 FDX (CCITT V.21, V.23)
SM8501	Modem 3+12® NCP	MD, PD, MA, OA, SW, ASY, IBM PC® Compatible	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
SM8502	Modem 3+12® A	MD, PD, MA, OA, SW, ASY, Apple, II/e/c Compatible	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
PM130	PocketModem® 123	AD, PD, TD, AA, AX, OA, AT, ASY SW	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
AM100	AutoModem® 21/23	AD, PD, TD, AA, AX, OA, AT, ASY AR	300 FDX, 1200/75 FDX, 75/1200 FDX (CCITT V.21, V.23, Bell 103)
AM120	AutoModem® 12/12	AD, PD, TD, AA, AX, OA, AT, ASY AR	1200 FDX (CCITT V.22, Bell 103, 212A)
AM140	AutoModem® 24/24	AD, PD, TD, AA, AX, OA, AT, ASY AR	1200 FDX, 2400 FDX, (CCITT V.22, V.22bis, Bell 103, 212A)
AM160	AutoModem® 123	AD, PD, TD, AA, AX, OA, AT, ASY AR	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
AM180	AutoModem® 1234	AD, PD, TD, AA, AX, OA, AT, ASY AR	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
SM8911	SmartModem® 21/23SA	AD, PD, TD, AR, AA, OA, AX, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX (CCITT V.21, V.23, Bell 103)
SM8721	SmartModem® 1200SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	1200 FDX, (CCITT V.22, Bell 103, 212A)
SM8821	SmartModem® 2400SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	1200 FDX, 2400 FDX (CCITT V.22, V.22bis, Bell 103, 212A)
SM8421	SmartModem® 123SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 HDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
SM8471	SmartModem® 1234SA	AD, PD, TD, AR, AA, AX, OA, AT, ASY, SY, SW	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
DL842	DataLock® 123SA	AD, PD, TD, AR, AA, AX, OA, AT, SW, EP, DE, PW, ASY, SY	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
DL847	DataLock® 1234SA	AD, PD, TD, AR, AA, AX, OA, AT, SW, EP, DE, PW, ASY, SY	300 FDX, 1200/75 FDX, 75/1200 FDX 1200 HDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
IN600	PC In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (Half Card Size)	300 FDX, 1200/75 FDX, 75/1200 FDX CCITT V.21, V.23, Bell 103
IN610	1200 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	1200 FDX (CCITT V.22, Bell 103, 212A)
IN615	2400 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	1200 FDX, 2400 FDX (CCITT V.22, V.22bis, Bell 103, 212A)
IN620	123 In/Modem®	AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX (CCITT V.21, V.23, V.22, Bell 103, 212A)
IN625	**1234 In/Modem®**	**AD, PD, TD, AR, AA, AX, OA, AT, SW, ASY, FI (¾ Card Size)**	300 FDX, 1200/75 FDX, 75/1200 FDX, 1200 FDX, 2400 FDX (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
TR100	TrailBlazer®	18,000 bps High Speed Modem, AD, PD, TD, AR, AA, AX, OA, AT, EP, ASY	300 FDX, 1200 FDX, 2400 FDX, 18,000 Adaptive Duplex (CCITT V.21, V.23, V.22, V.22bis, Bell 103, 212A)
SM2000	SmartModem® 9648FT	AD, PD, AA, AX, SY	2400, 4800, 7200, 9600 HDX 2-Wire and FDX 4-Wire (CCITT V.27, V.29)
SM2010	SmartModem® 9648DP	AD, PD, AA, AX, SY	2400, 4800, 7200, 9600 HDX 2-Wire and FDX 4-Wire (CCITT V.27, V.29)
SM2020	SmartModem® 9648HD	AD, PD, AA, AX, SY	2400, 4800, 7200, 9600 HDX 2-Wire Only (CCITT V.27, V.29)

NE29FPC

NetComm

Total Solutions for Data Communications

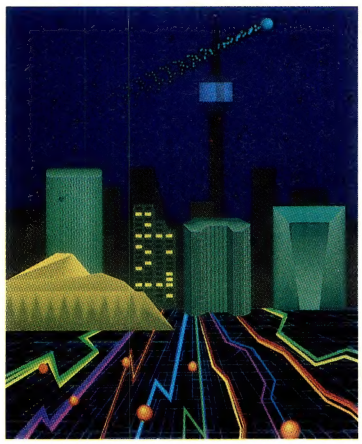
NetComm (Aust) Pty Ltd NSW PO Box 284 Pymble NSW 2073 Tel: (02) 888 5333
Telex: AA27488MODEMS Keylink 6007: DNC002 Viatel: 288855330 Fax: (02) 887 2839
Victoria 94 River Street South Yarra 3141 Tel: (03) 241 0534 Fax: (03) 240 0861
Queensland 5th Floor GWA House 10 Market Street Brisbane 4000
Tel: (07) 221 1409 Fax: (07) 229 9796
WA St Martin's Tower 44 Georges Tce Perth 6000 Tel: (09) 220 3407 Fax: (09) 221 1353

LEGEND:

AD – Auto Dial	FDX – Full Duplex	DC – Data Compression
MD – Manual Dial	HDX – Half Duplex	DE – Data Encryption
PD – Pulse Dial	AX – Auto Disconnect	PW – Password/Dial-Back
TD – Tone Dial	OA – Originate & Answer	SY – Synchronous
AR – Auto Ranging	AT – "AT" Command Set	ASY – Asynchronous
AA – Auto Answer	SW – Software Included	FI – Fully internal for IBM PC and compatibles
MA – Manual Answer	EP – Error Protection	

®SmartModem, AutoModem, In/Modem and DataLock are registered trademarks of NetComm (Aust) Pty Ltd. Apple, IBM and Commodore are trademarks of their respective corporations. ®TrailBlazer is a registered trademark of Telebit Corporation.

CONTENTS



Editor
Jake Kennedy
Features Editor
Robert Thirlwell
Production Editor
Allecia Khartu
Art Director
Pamela Horsnell
Production
Kylie Prats
Consulting Editor
Matt Whelan
Managing Editor
Brad Boxall
Publisher
Michael Hannan
Cover
Concept and computer graphics by Don Searll of Holovision.

EDITORIAL
AND OFFICE SERVICES
Allison Tait
180 Bourke Rd,
Alexandria 2015 NSW
Tel: (02) 693 6620
Fax: (02) 693 9935

ADVERTISING
SALES OFFICES
New South Wales
Business Developent Manager: Damien Prins
Sales Executives
David Mitchell
Mark Wilde
180 Bourke Rd,
Alexandria 2015
Tel: (02) 693 6666
Fax: (02) 693 9935

Advertising Production
Patrice Wohlnick
Victoria
State Manager
Virginia Salmon
221A Bay St, Pt Melbourne 3207
Tel: (03) 646 3111,
Fax: (03) 646 5494
Advertising Production
Matt Holden
Western Australia
Des McDonald,
48 Clieveden St, North Perth 6006
(09) 444 4426
Fax: (09) 381 3115

Queensland
John Saunders,
26 Chermside St, Newstead 4006
Tel: (07) 854 1119
South Australia
Michael Mullins
98 Jervois Street, Torrensville 5031
Tel: (08) 352 7937
New Zealand
Rugby Press
3rd Floor, Communications House,
Parnell, Auckland.
Tel: (09) 796 648
Tlx: NZ 63112 SPORTBY
All Subscription Enquiries to the Subscriptions Manager
(02) 693 6666

YOUR COMPUTER
is published monthly by
Brehmer Fairfax Pty Ltd,
Double Bay Newspapers Pty Ltd
and General Newspapers Pty Ltd
trading as
The Federal Publishing Co,
180 Bourke Rd,
Alexandria 2015 NSW.
Printed by HannanPrint,
140 Bourke Rd, Alexandria 2015.
Distributed by
Newsagents Direct
Distribution Pty Ltd

*Recommended and maximum price only.
ISSN 0725-3931.

NEXT MONTH INCLUDES

We thought we'd help you get organized for next year with a review of a full-featured project planner and organiser, TimeLine; to help chart the benefits of planning, Steve Keen continues the series on business graphics packages. For those who've wanted to try their own PC slide shows but couldn't justify the cost, we present the Shareware PC Demonstration System. 1989 will very likely be the Year of Optical Technology; to keep you abreast of the developments, Stewart Fist will be presenting a four part tutorial on this revolutionary technology. And for Atari users: our new columnist, Rita Plukss, brings you Mandelbrot graphics for both colour and monochrome screens.

Graphics

As computer hardware develops in power and sophistication, so can the software – nowhere is that more manifest than in graphics-related products, whether they be for serious engineering applications or simple business graphs – this month's features show just how far we've come from the days of Snoopy banners.

FEATURES

A decade of graphics! 16
Don Searll gives us an overview of the last ten years in graphics.

Australian Video Festival 20
The Third Australian Video Festival covered computer and video graphics, animation and creative production techniques. Robert Thirlwell reports . . .

Graphic Products 24
Some of the more stimulating graphics (and Cad) related software we've seen recently – with advise on choosing appropriate hardware and software for business.

FastTRAP 44
Reluctant mouseketeer, David Chatwin, debates the merits of a new type of trackball mouse – FastTRAP.

The Handy Scanner 48
Graphics and digital scanners go hand in hand – here's an affordable unit that's a fun as well as a serious tool.

Business Graphics 54
Anyone who thinks 'business graphics' still means a Lotus chart had better read on.

Database Data 68
In the fourth part of our database survey, Steve Keen takes on three direct contenders of dBase – Paradox, Focus and DataEase (but which is the winner?).

AGC wins with President 86
After a year's evaluation, the Australian Guarantee Corporation chose President's Desktop Publishing System and Ventura.

Amiga Graphics – a serious playground 90

The Amiga computer is well suited to graphics applications for artists, commercial users, or just for fun, as Robert Thirlwell found with these four paint packages and a digitizer.

REVIEWS

AutoCad Release 9 (and a preview fo 10) 34

As David Chatwin found, 4 kilograms of package, 10 disks with 95 files and documentation like 'War and Peace', all add up to one powerful package.

DesignCad 2-D and 3-D 50

For those who only need a basic Cad package, or who want to try one to see if Cad is the way to go, these successors to ProDesign II could well do the trick.

Microsoft Windows 2.03 and 386 74

John Hepworth looked at Microsoft Windows (386 and Version 2.03) and found that if you've got a '386 (or kids) around, it's a must.

The Compaq DeskPro 386s PC 82

Forget the corporate Gold Amex card – Paul Zucker will take the job if you give him a Compaq 386s.

QuickBasic Revision 4 106

Revision 4 has delivered the promise of earlier versions without the scars of growth – Jeff Richards found it's now a powerful tool.

INSTRUCTION SET

Hardware Hacking – Part 3 79

Tom Moffat debates whether EPROMs are permanent memory or not – and tells how to copy your own.

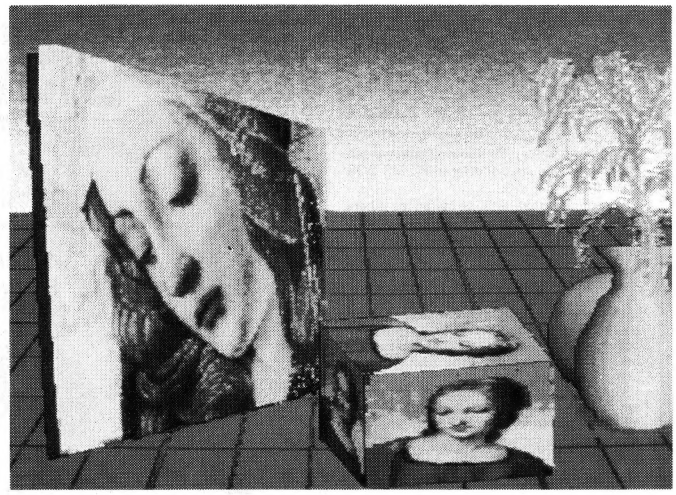
Mytouch.pas for date and time stamping 101

Turbo Pascal 4.0 is here – and Peter Nolan has been wasting no time!

PUBLIC DOMAIN

The Prophet 111

Still room for more Bulletin Boards!



New Products 114

Adobe Illustrator 88, a code generating graphics editor, three more suites for QikDraw, Word 4.0 for the Mac, a Mobile Fax Cabinet...

Your IBM 124

Big changes for DOS with version 4.0...

Your Mac 128

Stuffit for compressing HyperCard stacks.

Your Amiga 130

Too much good software!

Microbee File 134

The software reviewer's lot in life is not always easy...

Your Apple 142

Convert your Apple IIe or GS into a fast MS-DOS machine!

Your Amstrad 149

Solving copying hassles with a single disk machine and routines to create graphics windows.

The Forth Column 151

The implementation of Forth...

Your Commodore 157

Understanding the 128's memory management system

Cursory Glance 162

The Scentman.

SELTEC

SHAREWARE DISKS FOR ONLY $5!!

High volumes mean for a limited time we can can bring you a special offer of PC/MS-DOS disks for $5 per disk.

Please note that in those instances where Basic is required, users should have Basica, GWBasic, or our shareware compatible version on disk M9001. Basic2 is not suitable.

MS-DOS disks are formatted for standard MS-DOS 2 or greater. 360K. 5 1/4" and 3 1/2" disks are available.

Our MS-DOS games disks have a CGA emulator so that usually those with Hercules' boards can play. In only a few cases is the colour graphics board essential, and these instances are indicated.

Utilities which refer to use with Wordstar are usually not suitable for the Amstrad 1512/1640 version of Wordstar.

MS-DOS GAMES

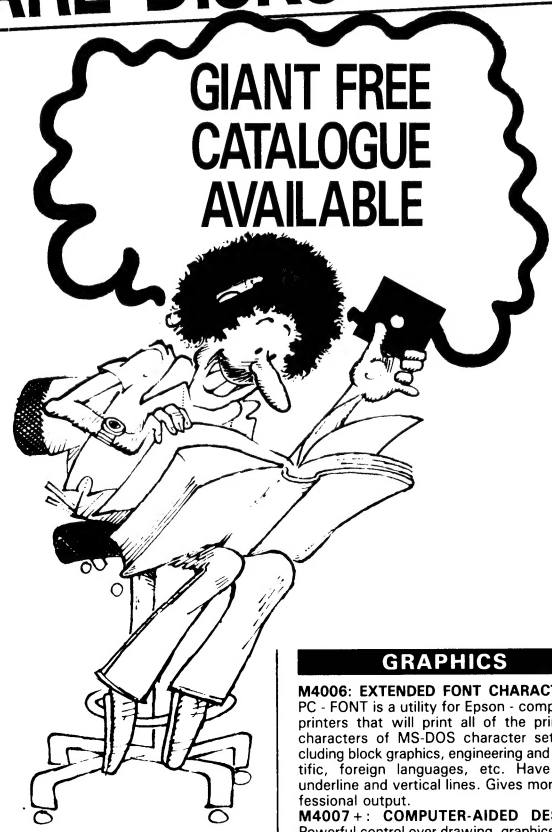
M1003: ADVENTURE. You guessed it, the original classic written in C with source code. Text-based.
M1033: (4) SUPER COMPILED GAMES. A super collection of arcade-type games, including Astro, Chase, Crisis, Dilemma, Mazel, Q-bert etc.
M1035: MORIA MAGIC AND MONSTERS. An excellent example of the magic and monsters genre, which allows you to choose from a variety of roles skills and weapons.
M1047: SUPER COMPILED GAMES (6). With Wheel of Fortune, Forest Fire, Zoarre Dungeons (good adventure), Quarterback (football).
M1072: LARN ADVENTURE. This is a very good Hack-like adventure game. Interactive, involving, with dungeons and dragons-type action.
M1073: CARD GAMES. A collection of some of the best - Bridge, Canasta, Draw Poker, and Hearts.
M1082: SUPER COMPILED GAMES (8). Selected compiled games including 21 (cards), Lazy Monday (Shootout at the Space Corral), Sopwith (Bi-plane dogfight simulation), Rogue Adventure, etc.

UTILITIES

M2001: UTILITIES. These are essential for your collection and include file maintenance superstars like SWEEP and WASH as well as library and squeeze/ unsqueeze programs. Lots of them.
M2005: SELECTED UTILITIES. Dozens of highly useful utilities, with documentation, compiled and ready to go. Includes Autodex (super file manager), Membrain (ramdisk) Squeeze and Unsqueeze, Directory Printer, calendar, File Finder (great for hard-disk), Keyboard Definer, etc.
M2008: SECURITY CODING. Well-documented program that goes beyond passwords - Encrypts your files to deny unauthorised access.
M2015: SUPER DISK CATALOGUER. This is a superior capacity disk cataloguer that will put order into your files, print listings, locate files, give directory printouts, etc.
M2030: SYSTEM SNOOPER. Has a collection of device drivers, utility tutorials, marks bad blocks, diagnostics, redirects output, and more.
M2035: MORE HARD DISK UTILITIES. Well worth having. We've collected some of the latest and most useful programs for optimising disk usage, undeleting, etc.
M2040: HARD DISK MENU SYSTEMS. Easy and comprehensive. Excellent choices for managing files. Includes HDMII.

WORD PROCESSING

M3012+: POWERFUL WORD PROCESSING. With many features such as split screen, windows, macros, footnotes, indexing, mail-merge, programming language and laserjet drive. Two disk set. Extensive documentation. NYWord.
M3015: SUPER KEY-DEFINERS. Reduce the amount of writing that you do by creating macros that can insert blocks of text with a single keystroke. Two programmes (Hot Key and Soft Touch) will allow more efficient writing.
M3025: TOUCH TYPING - PRACTICE AND EVALUATION. Lets you read script from screen, reports speed/accuracy. Can enter your own articles for practice. Assumes some familiarity with the keyboard. If not experienced, M3002 is a better choice.
M3043: TYPEWRITER EMULATION. Easier control of your printer with particular emphasis on printing directly from the computer in typewriter fashion. Suitable for envelopes, short letters, notes, labels, etc.
M3044: PRINTMODE. Special programs with numerous options for controlling output of Epson compatible printers. Easy to operate at the command line by just specifying the chosen options.



GRAPHICS

M4006: EXTENDED FONT CHARACTERS. PC - FONT is a utility for Epson - compatible printers that will print all of the printable characters of MS-DOS character set - including block graphics, engineering and scientific, foreign languages, etc. Have solid underline and vertical lines. Gives more professional output.
M4007+: COMPUTER-AIDED DESIGN. Powerful control over drawing, graphics, printing and slide show. For easy creation and editing of graphics screens. Two disks. Key Draw. Also has CGA emulator for Hercules boards. A set of "clip art" drawings is now available on disk to accompany this program.
M4011: GRAPHICS ICON/CHARACTER CREATOR. Especially suits creation of symbols and logo-type characters. Contains Iconmaster.
M4012: TALK ILLUSTRATOR. "Present" is an easy-to-use program which provides special features for "slide" presentation. It will take snapshots of screens and combine them for automated presentation, allow you to combine comments with images, etc. For an example of its use see M1069.

LANGUAGES

M5001: FORTH. This is F83, the latest standard, with built-in editor, compiler, etc.
M5002: SMALL C. Ron Cains compiler for those interested in learning the C language. See also M5046.
M5014+: ARTIFICIAL INTELLIGENCE. These disks contain TWO Expert System Shells - ESIE and EXPERT. They help you to design a system that will gather information and make a recommendation. Two disks.
M5049: C WINDOWS AND SCREENS. Extensive library of routines for C programmers.
M5054+: MODULA-2 COMPILER. A complete implementation with a compiler, linker, integrated editor and windows. 2 disks.

BUSINESS/CALCULATION

M7009: 1-2-3 UTILITIES. Highly regarded collection of utilities that enhance the operations of Lotus 1-2-3. A multi-function utility that assists with use of Lotus 1-2-3. Provides an ascii text generator, printer control, Prokey-type template, useful macro programs, and more! A gem.
M7016: STOCK CHARTING SYSTEM. Records highs, lows, volumes, moving averages of stock market prices and charting for you. Requires Basic.
M7028: MANAGING MONEY - Earning an income is only part of the task. This disk helps you to keep some of it and assists in making your capital grow. Includes Time and Money plus some very good analytical tools.
M7050: STOCK MARKET ANALYSIS (2). Keeps track of investments, reads reports, calculates rates of return, present values, costs, percentage gains & losses, produces files for investments under consideration for evaluation, etc. Needs Basic. Uvester.

DATABASE MANAGEMENT

M8001+: DATA BASE MANAGEMENT - PC-FILE PLUS Version 2. Son of PC-File III with many good features and recent enhancements. File manager, which also does calculations. Suitable for sales, inventory, personnel, mailing lists - even as a cash book! Will total columns. Two disks. Please note we are official buttonware distributors.
M8014: INSTANT RECALL. A memory-resident database that lets you record and access information without leaving your main program. Happily cohabits with most other programs.
M8015: RETAIL INVENTORY STOCK CONTROL. A menu-driven very fast system for keeping inventories up to date. Suits business that supplies products or parts. This version works on twin floppy drives only. Author has a hard disk version available.
M8022: HOME INVENTORY. Keep a record of your possessions as a safeguard against fire and theft. Also provides a record for insurance and executorship purposes.
M8028: DOCUMENTATION SYSTEM FOR DBASE2/3, CLIPPER, FOXBASE. Gives paths, program tree structure, lists files used, gives summary of variables, procedures, indexes, cross-references.

EDUCATION

M9008+: "C" TUTOR - A two disk set that contains a comprehensive and easily followed course in the "C" programming language. Includes tutorial text and source code for examples. Requires two drives. Suitable for those with prior experience in programming. If you don't already have a C compiler, we recommend M5046 to accompany this set.
M9017: DOS TIPS AND HINTS. Collection of advice on printing, screen, keyboard, colour, batching, booting, AT keyboard, etc.
M9022+: MODULAR2 TUTORIAL. 2 disks that teach you how to program in this important new language.
M9026: FRENCH TUTORIAL. Special attention to the conjugation of verbs.
M9027: SECONDARY MATHS (2). Compiled, with Pascal source. Equations, lines, triangles, Ohm's Law, Parallel Circuits.

PHONE NOW WITH YOUR ORDER

(02) 29 4242
(02) 29 2866
(02) 29 3810

SORRY, MAXIMUM ORDER OF 10 DISKS PER CUSTOMER ON THESE ITEMS
NOTE: ORDERS MUST STATE THE NAME OF THIS MAGAZINE TO OBTAIN THE SPECIAL PRICES.

SHAREWARE REQUIRED FOR INTERNATIONAL DISTRIBUTION

We have extensive marketing and distribution facilities locally and overseas and require quality software for international distribution. Adequate documentation should be on the disk. Please forward submissions to our Chief Executive at the address below.

CP/M, MACINTOSH

Call or write for free catalogue.

PUBLIC DOMAIN NEWSLETTER

For news, views, reviews and how to use public domain and user-supported software subscribe to our quarterly newsletter. Also includes updates to catalogue and monthly news-sheet on new releases. Only $21 for subscription to Australia, New Zealand residents should add 10% GST.

ORDERS: MUST BE PREPAID. All disks on this page are $5. dollars per disk. 3.5" microfloppies are $2. extra per disk. Add $3. post/pack ($6. foreign) to total order. Prices are Sales Tax inclusive for Australian residents. New Zealand residents add 10% to total order including post/pack for GST.

PAYMENT BY MAIL TO:
SELTEC SOFTWARE
Box C343, Clarence St PO, Sydney,
NSW 2000
(Office: 3 Barrack Street, Sydney)
TELEPHONE ORDERS:
(02) 29 2866, (02) 29 3810, (02) 29 4242.
FAX: (02) 262 1280
PAY BY: Mastercard, Bank Card or Visa.
United Kingdom: (0784) 64257
New Zealand: (054) 84-622.

We cannot guarantee the suitability of public domain/user support software for users needs or equipment

IC1017

MATT WHELAN

EDITORIAL

The PS/2 is dead!

THE PS/2 is dead. IBM's brave new view of the future (or, its silly attempt to make life hard for the opposition) has fallen in a hole, and it probably won't be able to clamber out. This 'pronouncement' has been on the cards for some time, but none of us has been brave enough to say it until now.

My 'brave' statement follows an interesting series of conversations over the last few months with Les Bell, who was founding editor of *YC* and who now tours the world giving seminars on DOS, PC Support, and OS/2.

He is in close contact with the DP staff of the major corporate PC buyers – they're the ones who regularly fill his seminars – and is recognised as one of Australia's few real authorities on PCs. Our conversations have steadily moved the PS/2 downhill, as Les points out, user complaints about the machines and many corporate decisions to keep away from the 'new standard' until a real standard has clearly emerged.

Our most recent conversation was in London a few weeks ago. 'The PS/2 is dead,' said Les, 'and it only needs someone to come out and say it for it to be complete.' Two days later nine major US 'clone' makers announced the EISA (Extended Industry Standard Architecture) standard. Somebody had come out and said it . . .

IBM tried to win the 'clone war' – it was losing out dramatically to clones of the original open-architecture PC design - by creating an advanced, but incompatible, new standard with the MCA (Micro Channel Architecture) bus. This was carefully protected from unlicensed cloning, and IBM assumed the competition would have to fall into line, paying for the rights to use it. Problem was, there was nothing to demonstrate the superiority of MCA: all the users could see was a lack of add-on boards and a wasted investment on the old architecture.

What they really wanted was a more advanced version of the PC architecture, and they shied away in droves from heavily committing themselves to any 32-bit system while all the solutions were proprietary. IBM's market share continued to fall – from nearly half down to 33 per cent – while companies like Compaq forged ahead using their own extensions of the old standard. Compaq has moved up to take 25 percent of the US market.

However, the users were still confused. While they could buy a wealth of add-ons for these machines, they still had to buy 'their' company's memory to get 32-bit speed. And future expansion, with more capable 32-bit cards, looked like facing the same problem. Now Compaq, AST, Epson, Hewlett-Packard, NEC, Olivetti, Tandy, Wyse and Zenith have given the users what they want: an upward-compatible, standardised 32-bit bus. These nine are big players, and between them sell many more machines than IBM – unless IBM makes them an offer they can't refuse on MCA licencing, EISA is likely to walk all over it.

IBM makes the point that to gain any advantage from the EISA standard, users will have to buy new boards anyway – boards that take advantage of the 32-bit bus. It says the 'protect the card' argument is invalid because using existing 16- and 8-bit boards means running at 16- and 8-bit speeds. However, this argument ignores the convenience of 'transition compatibility': if your existing 16-bit comms card is the *only* one available to do the job, it doesn't matter how fast it is – it does the job until a 32-bit version is released.

And this argument ignores the real point of the whole 'market hesitation' – what the buyers wanted was an industry standard, not just an IBM standard. If everyone had agreed on MCA, it would have been MCA, whether or not it meant buying new cards.

IBM has locked itself *out*, and it will be extremely interesting to see what it does to 'un-dig' its hole . . .

Low Cost Software for your PC

Low cost software is now available for your IBM & compatible PC or your Commodore 64/128. Quality user supported and public domain software is available for $12 a disk. No membership charges, no postage charges, no requirement to purchase more, just quality software at very low prices. Below we list just some of our great programs for the IBM PC. Call or write for your complete 16 page catalogue free of charge. No obligations, just the opportunity to save money .

BUSINESS

PC1009 PC DESK: Good program that allows you to keep a file of names and addresses and easily merge them into your documents using the inbuilt word processor. Also provides handy access to a calendar, calculator and phone dialler.

PC1022 TURBO SPELL: Spelling checking program that includes its own large dictionary and allows you to add your own words easily.

PC1037 READRITE: Memory resident style analyser that allows you to determine the readability using the Flesch scale, of text on your screen as you type it.

PC1080 THOUGHT ORGANISER: Thor, a brain scanning program. Allows you to outline your thoughts and ideas on any topic and review them, edit them, scan them, and print them as you need. Great for students and business people.

PC1220 ONBASE DATABASE: Excellent memory resident "pop-up" database which allows you to have up to three databases resident on your computer at all times.

PC1240 FILEMASTER: Program designed to help you manage your paper files. Allows you to maintain them in serial order and look them up by subject, category, sender, receiver, or a number of other criteria.

PC1400 LOTUS COMPATIBLE SPREADSHEET: AsEasy, an excellent Lotus 123 compatible spreadsheet program with almost all the features of its famous counterpart, and a host of power features.

PC1410 INSTACALC: Powerful memory resident "pop-up" spreadsheet which can read Lotus files. Can import data direct from screen and export data directly into word processing documents.

PC1623 PC BILL MASTER: Cheque book management program which is very easy to use. Has a regular cheque book register type display and maintains recurring payments. Allows for easy bank statement balancing, and up to 100 ledger accounts.

PC1681 SOLVE-IT: Financial analysis program which calculates return on investment, break even analysis, depreciation schedules, loan schedules and even statistics. Computes 28 functions in all.

PC1750 SPC INVENTORY: Good inventory program which keeps track of sales, stock, and replacement cost. Can add sales tax, and handles up to three selling prices per item.

PC1860 MANAGEMENT TUTOR: Collection of programs that provide a complete computerised management course. Covers communication, delegation, decision making, interviewing, and planning.

PC1962 EASY PROJECT: Project management tool which allows upto 20 user defined project phases, unlimited number of resources per project, up to 1000 user defined tasks per project, fast data entry, automatic scheduling, and Gantt chart production.

PC3101 OVERVIEW: DOS shell file manager for hard disk users. Enables you to carry out routine file commands easily as well as providing a tree directory of your drive, multiple window access to up to six directories, file view function, and more.

PC3230 CP/M TRANSFER: Excellent CP/M to DOS transfer utility that also includes a CP/M emulator. Allows you to read Osborne, Kaypro, Morrow, and other CP/M formats, and even run the CP/M programs on your PC. **TWO DISK SET.**

PC3270 SOFT-TOUCH: Keyboard utility that allows you to program individual key combinations with user defined keystrokes or macros. Also allows you to combine three keystrokes into even larger macros.

PC3400 LQ: Memory resident printer utility that allows you to produce letter quality print on inexpensive dot matrix printers. Also lets you use different font sets on your printer with four fonts available at all times. Suitable for Epson, Star, Citoh, and IBM Proprinter.

PC3450 CLASER: Excellent utility for HP Laserjet users. Allows easy choice of printer fonts, printer port, graphic screen dumps, and even allows Laserjet to emulate an Epson FX printer.

PC3500 P-BASIC: BASICA compatible basic interpreter. Runs almost all Basic software. Suitable for Amstra PCs to replace non compatible BASIC-2.

PC5030 OPTIKS: Astounding graphics package which allows you to read and write almost any graphics format including MacPaint, PCPaintbrush, Newsroom, MS Paint, and more. Supports most printers including HP Lasejet, and even supports scanners. Most powerful graphics package we have seen. **TWO DISK SET.**

PC5750 BARCODE GENERATOR: Create barcodes with this program and your printer. Uses 3 of 9 system which allows for full alphanumeric coding. Configured for Epson and IBM Proprinter, but can be configured for other printers.

RECREATION

PC2030 3D CHESS: Excellent graphics chess game suitable for both CGA and Hercules video. Multiple levels of play from beginner to champion. Allows analysis of play, help as you play, and a true three dimensional view of the screen.

PC2042 DIAMOND BASEBALL: Text simulation of the play by play action of a baseball game. You are presented with all the situations faced by a major league manager. So good it was used by a US radio station to simulate a game cancelled due to a strike.

PC2060 AMERICAS CUP YACHT RACE: Excellent graphics game which allows you to race the cup from your PC. Control the rudder and the sails as you tack and round the buoys with the best. This game has to be seen to be believed.

PC2052 REFLEX POINT: Graphics game where you have to save the Earth from Invids. In order to complete your mission you will use motor cycles that become body armour and jets that become robots.

PC2054 NINJA: Martial arts game which combines platforms with arcade action fighting. Requires CGA video card.

PC2100 SLEUTH: Adventure game where you have to find the murderer. Each time you play a new scenario is produced so you never get bored.

PC2106 SPACE QUEST: Adventure game with graphics where you are travelling through space and as you near your destination, trouble strikes.

PC2110 BRAINSCAPE: Excellent educational adventure game which teaches you neuroanatomy as you play. You find yourself alone in the brain fighting to find your way out. Interesting graphics.

PC2202 BLACK JACK TUTOR: Blackjack game which actually helps you improve your game. You play against the computer which helps you practice new tactics and strategy as you play.

PC2300 WAR ON THE SEA: High level strategic and tactical simulation of typical World War II naval campaigns.

PC2353 MEGAGOPOLY: Great investment strategy game . You inherit $100,000 and must obtain financial independence. Test your investment skills whilst having fun.

PC2800 ASTROTIT: Adult arcade game. Destroy the falling objects before they destroy you. However you have to see them to believe them. Great fun for adults.

PC2806 FRENCH: Adult adventure game based in a French whorehouse. Find your way out but make sure you "look" at all the girls first.

PC8005 ABC : Good program for children to learn letters and numbers, and also develop their computer literacy.

PC8020 CALCULUS TUTOR: Good program for those ready to learn Calculus and advanced mathematics. Covers trigonometry, algebra, exponents and more.

PRICES

5 1/4".....$12 a disk

3 1/2".....$18 a disk

FREE POSTAGE & HANDLING

HOW TO ORDER

To order any of our software just write down the names and numbers of the programs you require along with your name, address and computer type, and mail it with payment by cheque, money order, or creditcard to

FREEWARE

P.O. Box 496

Newtown NSW 2042

or call us and use your creditcard on

(02) 519-4233

Fax (02) 516-4236

Credit cards accepted are Bankcard, Visacard, and Mastercard. Please include your card number, type and expiry date.

Commodore 64 Software also available

JAKE KENNEDY

YOUR COMPUTER

Stuck with reality

Originally I had planned to give you some background to several of the graphic stories in this issue, but I'll let them stand on their own because there's another matter that I'd like to cover: grey marketeering (or parallel importing, depending on whether you approve or not).

Just so we're all on the same wavelength, 'grey marketeering' refers to the practice of a local company going to an authorised dealer in the US (usually) for a product and importing it for resale here, even though there is an 'official' distributor in Australia already. There are a variety of reasons why the local company would take that route, but the most common one is that it can get a better price.

Unfortunately, this can cause a few headaches, particularly for the end user: even though he may be using a very popular and well-supported piece of software (or hardware, for that matter), the Australian distributor doesn't want to know about him, arguing that it can't afford to support a product it didn't sell. And, the grey importer's argument generally goes something like 'at *that* price you want support, too?!'

In principle, I believe in free trade – with a big 'but': not if the end-users has to pay the penalty of lack of support. I cannot understand why software publishers don't offer universal support for their products – I can take my Sydney-bought watch or camera into dealers practically any place in the world and have them serviced. Why can't the same apply to software?

(Hardware is a different matter – suffice to say that none of the local electricity commissions 'approve' of those 220V power supplies, regarding them as dangerous to the user.)

What started me thinking on this subject wasn't the number of pro arguments I've heard from the grey importers or the con arguments from authorised distributors (the logic on both sides is generally sound, it's the basic premise I disagree with, but more on that later) – rather it was the number of examples of the 'benefits' that individuals (and even businesses) have realised by purchasing from a dealer overseas: generally they seem to save fifty to sixty per cent of the Australian retail price and in some instances have actually received the products much quicker than the local dealer quoted on delivery.

November 1981

'What is a home computer? The ultimate multiple TV game. An untiring tutor who will teach you almost anything and at your own speed. A way of familiarising yourself with computer technology.' – *Dick Smith Electronics ad for the System 80, 'Australia's Fastest Selling Home Computer,' $750.*

'We can accurately predict that there will be one megabyte of power in a wrist watch by the year 2000. . .What exactly they will do with all that power is not known. . .' – *Computer Growth, the Art of getting Smaller, p20.*

'Avoid 13 cm (5.25 inch) minifloppies! If you only want to store that much information, you may as well memorise it, and run the business in your head. Minifloppies are really OK in their place, which is beside a thumping great hard disk.' – *Systems Analysis in Small Business, p45.*

'Never in the History of Personal Computers has so much Computer Power been given to so many for so little.' – *BS Microcomp ad for the Commodore Vic-20 (5K of RAM, expandable to 32K; $399.95).*

'Apple is upgrading the Apple III and merging it with a 5 megabyte hard disk for use with the IBM when it comes out.' – *What's happening at Apple, p59.*

On my desk right now I have eleven letters from readers, all received in the last several months, detailing their experiences; at some point every one of them descries the 'rip-off' practices of the local distributor. At the risk of alienating some very important people (namely, our readers), I contend that you've missed the point. Heaven knows I like a 'bargain', too – but let's stand back and take a different perspective.

I don't doubt that rip-offs are rife in the computer industry, but that's not an industry problem, it's a human problem – name one field of business that doesn't have its own examples of 'rip-offs.' Simply put, I think we're paying the penalty for too much of a 'good thing': I'd bet that Australia has more software products per head of PC users than any place else in the world. Since we're a relatively small market spread over a huge country, most distributors will realise little economy of scale.

And that premise that I think is wrong? It's that we 'need' all those products. In a market our size, I don't think we do. In no way do I mean to suggest limiting a buyer's freedom of choice.

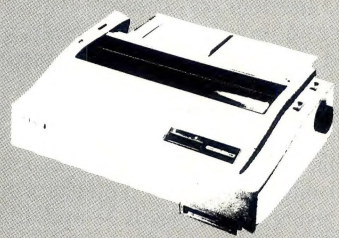
Here's a good example: recently I counted almost fifty different commercial word processors available in Australia. I'm sure that each of them has at least one unique feature that cries 'buy me' to a particular market niche, but I'm also sure a small range of mature products would satisfy every user's needs – and those products could be sold for much less.

But, one of the things that makes the computer industry so interesting is the fact that it is still developing. By the time we reach that 'ideal' situation, computers will be as exciting as refrigerators (and there'll be as much need for computer magazines as there will be for refrigerator ones). In the meantime, we're stuck with reality. □

VEGA
VGA
$540
INC. TAX

MICROSOFT
FULL RANGE
CALL FOR
PRICES

UNBEATABLE
DEALS
ON
ULTRA PC'S



FUJITSU
PRINTERS
WYSE PC'S

SOFTWARE

SPREADSHEETS

Quattro	$285
Lotus 1-2-3	$625
Silk	$199
Javelin Plus	$749
Supercalc 4	$299

DATABASES

Dbase III Plus	$795
DBase IV Plus	Call
Paradox II	$899
Fox Base	Call
Reflex	$199
Clipper	$845

WORD PROCESSORS

Word Perfect V.5	$625
Multimate Adv II	$689
WordStar Prof. 5	Call
WordStar 2000 + Rel 3	$495
Microsoft Word	Call

GRAPHICS

Freelance Plus	$699
Harvard Graphics	Call
Magician	$399
GEM Draw	Call
Ventura	Call

UTILITIES

Norton Utilities	$120
Norton Advanced	$189
Norton Commander	$105
Xtree Pro	Call
DS Backup Plus	$175
TypeQuick	$84
Fastback Plus	$299
Sideways	$105
PC Tools Deluxe	$115
Complete PC Tutorial	Call

COMMUNICATIONS

Gateway V3	$149
Crosstalk	Call
Mirror	$125

INTEGRATED

Framework II	$899
Symphony	$945
Open Access II	$975

BORLAND

Sprint	Call
Quattro	$299
Turbo Pascal V.4	$125
Turbo ProLog	$125
Turbo Basic	$125
Turbo C	$125
Sidekick Plus	$280
Pascal Toolboxes	$125
Pascal Developers Library	$425

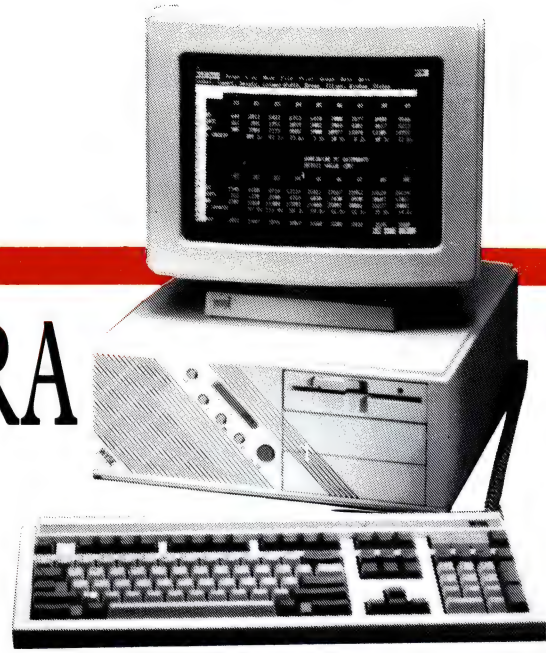
HARDWARE

NETCOMM MODEMS

Smart 1200 SA	$518
Smart 123 SA	$695
Smart 1234 SA	$779
In Modem 2400A	$474
In Modem 123A	$445
Automodem 12/12	$395
Automodem 123	$475
Automodem 1234	$555
Pocket Modem	Call
Others	Call

TAPE UNITS

Archive 60Mb External	Call
Archive 40Mb Internal	Call
Everex Excel Stream 60Mb	Call
Peridata Drives	Call



ULTRA WYSE

MICRO SALES

PERSONAL COMPUTING FOR BUSINESS

MONITORS

NEC Multisync II	Call
NEC Multisync Plus	Call
ADI 12'' Mono	$199
ADI 14'' Mono	$239
ADI EGA	$799
ADI VGA	Call

PRINTERS including cable

FULL RANGE:
EPSON
FUJITSU
STAR
OKI
NEC
BROTHER

DISK DRIVES

Seagate 20Mb w/- Controller	$489
Seagate 30Mb w/- Controller	$525
Control Data 40Mb Voice Coil	$990
Control Data ESDI Drives	Call
Large Drives	Call

LOTUS AGENDA NOW IN STOCK

CARDS & CHIPS

Hyperace 286 Plus 10MHz

PC/XT	$689
Intel Inboard 386 XT	$1540
Intel 80287/8	$495
Intel 80287/10	$629
Paradise VGA Plus	$550
Vega VGA	$540
Vega VRAM	$1450
Mono + CGA	$104
Everex EGA	$349

- All prices include sales tax
- All products sourced from official Australian distributors
- Come with full warranty & support
- Call for any products not listed

Prices correct at time of printing, subject to change and stock availability

SEAGATE 20MB WITH CONTROLLER
$489
INC. TAX

1ST FLR 579 HARRIS ST
(CNR MACARTHUR ST)
ULTIMO 2007

(02) 281 3377
FAX 281 3920

CANBERRA COMMENT

Software sales tax changes

The government's decision to withdraw some software sales tax is not as good as it first appeared in the budget. Large companies will benefit from the sales tax changes, while smaller ones may not.

The budget removed sales tax from single user developed software. However, since almost all software developed for sales is licensed for a single user there seems a grey area for the tax department to pounce on. In addition, big companies with application software written only for them will pay even less tax.

Bob Mounic, the executive director of the Australian Information Industries Association (AIIA), thinks the new budget changes will help sort out any existing confusion. Mounic said that software developers who are also selling their own products could now expect to pay sales tax *only* on the wholesale price of the software. Previously the tax was charged on the retail price.

Mounic was still critical of sales tax on software generally. He thought software sales tax was an unnecessary cost on a product which makes a significant contribution to the economy.

David Strong, Apple Australia's managing director, *recently lamented the lack of PC market information in Australia – unlike car makers, the PC industry has no official monthly sales figures showing market shares.*

'One of the secrets of FBN's success has been its marketing approach: by keeping the price of its software at under $100 without using copy protection, the company has not been bothered with pirates.' ***– Susan Williams, FBN manager.***

Faster, better, nicer

FBN Software in the ACT has established a world wide reputation with its PC-Alien, SmartKey and Postcode utility programs. Nick Hammond started FBN in the ACT in 1980 and now the company sells 80 per cent of its products outside Canberra. Many go overseas – for example over 20,000 copies of SmartKey were sold in the US last year.

FBN's newest product is Postcode Plus, which calculates postage charges for any article on weight and distance. As well, Postcode Plus calculates comparative costs on different methods of sending articles.

Susan Williams, FBN's manager says, 'One of the secrets of FBN's success has been its marketing approach: by keeping the price of its software at under $100 without using copy protection, the company has not been bothered with pirates.' Williams noted that one of the company's programs has turned up on bulletin boards a few times, but with the low cost of FBN software, users preferred buying the genuine product with its original manual.

No official figures!

David Strong, Apple Australia's managing director, recently lamented the lack of PC market information in Australia — unlike car makers, the PC industry has no official monthly sales figures showing market shares.

Strong attacked what he saw as the sensational sales figures that some recently established PC sellers have released to the media. Although Strong used no names, Amstrad seems the likely Apple target because of its recently

claimed 13 per cent PC market share. If all the current market share claims of PC companies are added together, they total well over 100 per cent.

Strong pointed out that Apple will continue to avoid the question of the number of Apple Macs sold because of the extravagant claims of some of Apple's newest competitors. He called for some legitimate retail sales research to settle the question of market shares.

Strong denied claims that Apple made a 72 per cent margin on each Macintosh. He said that in the last financial year Apple's net profit was 8 per cent on sales.

Meanwhile, well established PC maker, Commodore, has announced results for the last financial year. The US parent company had sales of $871 million, an increase of 13 per cent.

In Australia, Commodore's managing director, Tony Serra, said that the Amiga 500 introduced in August last year had sold 28,000 units. The sales of Commodore 64s were up 30 per cent. Commodore Australia plans to reach sales of $100 million by 1991. Serra said Commodore could now talk realistically of annual sales of around 56,000 units.

The news on IBM PS/2 systems is not so good. Figures coming from overseas suggest IBM has lost ground to Compaq, Apple and others, with sales down seven per cent in the last half of the financial year. IBM says the company delivered two million PS/2 machines, although some industry observers believe IBM has not sold all the machines it has made.

Nevertheless, the PS/2 still has a good hold, particularly when analysts point out that the Macintosh took more than three years to gain market acceptance.

Telecom links with Hewlett-Packard

Dr Terry Cutler, Telecom's corporate strategy director, recently announced a $12.5 million Telecom venture with Hewlett-Packard, Australia. This gives Telecom access to some of the best computer technology available.

Other suppliers are concerned about Telecom's moves into the information technology area. With a government policy of deregulation for the communications industry in the 1990s, Telecom seems set on protecting its present position. It has alrady done a $75 million deal with AWA, and recently completed a marketing deal with Fujitsu and a UK software company, Systems Reliability.

The Fujitsu link gives Telecom a PABX manufacturing facility. Telecom's source of PABX equipment, up to now, was NEC.

The executive director of the Australian Telecommunications Users' group, Mr Wally Rothwell, sees Telecom's strategy as a way of avoiding changes to telecommunication regulations announced last May. Senator Evens, the Minister for Transport and Communications, said last May that Austel, a new government authority, would ensure an orderly transition towards communication de-regulation.

Telecom's actions since May suggest it is rushing in ahead of any potential competitors. Telephone charges have also risen just at a time when Telecom needs extra cash for its joint technology ventures. □

RCS DESIGN

CAD(D), a.&.n. (acronym) Computer Aided Design, Drafting. The modern tools of designers, architects, engineers and draftors. Usually comprises computer workstation, high resolution graphics, input device such as a mouse and very complex computer software. Properly implemented, large productivity gains and consistent high quality work is possible using a CAD system. Now being found in all areas of engineering including electronics, electrical, mechanical, civil, structural and architectural.
See also CAE, CASE, CADCAM

CAD BUREAU, CAD SOFTWARE, HARDWARE, CAD SUPPORT, CAD SERVICE, CAD TRAINING

RCS CADCENTRES

A Division of RCS Design Pty. Ltd. — Incorporated in Victoria.

UNIT 12/33 Waterloo Rd., Eden Park Estate, North Ryde N.S.W. 2113.

728 Heidelberg Road Alphington, Victoria 3078 Australia
Tel: (03) 499 6404
Fax: (03) 499 7107

BACK 4 UP

ESSENTIAL DATA DUPLICATOR

Back up your copy protected disks with **ESSENTIAL Data Duplicator 4 PLUS** ■ **EDD 4 PLUS** is new technology, not just 'another' copy program. The **EDD 4 PLUS** program uses a specially designed hardware card which works with your disk drives to back up disks by accurately copying the bits of data from each track. Don't be fooled, no other copy program/system for Apples can do this! ■ In addition to backing up disks, **EDD 4 PLUS includes several useful** utilities such as examining disk drives, certifying disks, displaying drive speed rpm's, plus more! ■ **EDD 4 PLUS** runs on Apple II, II Plus (including most compatibles), and IIe, and is priced at $190.00. (duodisk/unidisk 5.25 owners must add $32.00 for a special cable adapter). ■ A standard **EDD 4** version which doesn't include any hardware is available, and can be used on Apple IIc and IIi (using emulations mode) and is priced at $125.00.

■ Bankcard and Master card accepted by phone. Add $3.00 to all orders for postage and handling.

All orders must be prepaid.

WARNING: EDD is sold for making archival copies only

UTILICO SOFTWARE

83 HALL ST., BONDI BEACH, NSW 2026 PHONE (02) 30 2105

HOWARD A. KARTEN

AMERICAN GRAFFITI

Graphics

Computer graphics could grow up to be something great – *if* it survives its infancy. Watching current goings-on in graphics – the even-worse-than-usual liberties vendors are taking in peddling their products and the over enthusiasm of users – is a little like watching a three-year-old with a pet: you're happy to see the child having fun, but you wonder if the pet will survive.

Let's start with us users. Some users are responsible for publishing newsletters, flyers, and other relatively simple items. They appear to believe that laser printers and desktop publishing are the greatest thing since canned beer. You can always tell when a person has just acquired graphics tools: the newsletter, flyer, announcement, or whatever, uses every available option. There's a garish mix of column widths, headline sizes, type fonts, and so on. The result is a printed page that's a hodgepodge – and is almost always harder to read than a plain old KISS-rule layout. I call this the Candy Store Phenomenon: individuals who are otherwise sensible people can't decide which they like most, so they wind up having 'one of everything'.

It makes you wonder where we'd be if the older generation had embraced and encouraged graphics!

In a candy store, kids' behavior is often limited by two factors: the purse strings are often controlled by someone bigger, and the resulting bellyache can be a great teacher. With graphics, the bellyache victims are often managers, who respond by placing strict limits on users ('no more than two type styles or fonts on the same page').

One of the sins of vendors is the indiscriminate way they stick the label 'instant' on their wares. Of course, we all know that vendors try especially hard to stick to the literal truth in their ads and that only rarely – purely by accident, of course – does any hyperbole or imprecision creep into an ad. The result, however, is that once in a while, some misguided soul unfortunate enough to fall for the 'instant' claim doesn't fully understand why he can't simply open the packaging, slip the disk into the drive, and start blazing away with complete designs for nuclear-powered aircraft carriers, or at least elaborate two-level pie charts.

In the past, hyped expectations have actually impeded progress. For example, early hopes for micros in school proved unattainable in practice, and it is only recently that micros have appeared in significant numbers and roles in the schools. If users find that they can't achieve the magic and instant results promised by vendors, what's to prevent them from concluding that it's all hype, and that they can get along doing things as they've always done them?

The early history of computer graphics' use – in business, at least – speaks volumes about human and organizational behavior. Almost two decades ago, businesses used basically one type of computer output – voluminous printed output, row upon row and page upon page of numbers, with little or no summarization. Once in a while, graphs were produced by printing multiple rows of Xs.

That wasn't surprising, since the only hard-copy output was oriented to capital letters that could fit in a box 1/10 of an inch wide by 6 rows to the inch. What was surprising was that there were a few hackers (visionaries?) who were experimenting with graphics, but they were not encouraged, because virtually no business users could see how useful graphics could be. Note, too, that many of the folks who were instrumental in pushing graphics were not the older, wiser, more experienced heads, but the younger folks who were intrigued by the fun aspects of playing with graphics. It makes you wonder where we'd be if the older generation had embraced and encouraged graphics!

Related to this is cross-fertilization of different disciplines in computing. Basic personality differences often mean that cerebral types – prototypically, planners and analysts – have difficulty listening to the more artsy types. They, in turn, often have terrific visions, but don't communicate as clearly or linearly as the analytical folks. Too bad, because each group has some good reasons to communicate more and better with the other.

I've seen a couple of instances of concepts in one field – graphic design, say – influencing others, such as presentation of graphics. Artists and other types out of the mainstream of business have influenced classic business use of graphics – the formerly arcane art of page layout is an example. This suggests to me that those non-mainstream users – people like artists, designers, dreamers – should keep playing with their computers, and probably think actively about how they can sell their services to the mainstream business community; the mainstream users – managers, technical workers, and professionals who rely on computer output to do their jobs – will benefit from the other group's skills only if they are open and flexible enough to listen to what those folks are saying.

On the positive side, today's activities in graphics are just the beginning. When visionaries begin combining elements – for example, creating AI graphics programs that will assist you in deciding what is the most appropriate kind of display for your application, or charts that are more like sophisticated pictures used in

LABORATORY MICROSYSTEMS INC.
THE FORTH '83 SYSTEMS FOR IBM/PC, AT and 386
16 and 32 bit implementations. Software and Coprocessor Floating Point, Graphics, Assembler, String function library and Full Screen Editor support.
Design Target applications for
8086/88, 80286, 80386, 8096/97, Z-80, 8051, 68000, 6809, 68HC11, Z-8 etc.
Distributed by:
Wave-onic Associates
PO Box 607
Cannington WA 6107
Tel:(008) 098839

magazines than simply line drawings – then graphics will become as commonplace as word processing.

Computer graphics holds forth some incredible potential that I think has barely been realized. For example, I have a hunch that within a few years, today's standard business presentations will be a thing of the past. Probably the most common form of business presentation today is a stand-upper, the presenter talking his way through poster-size charts, prepared ahead of time and often at considerable expense and anxiety. Here's a vision of the future that I don't think is at all unreasonable: a businessperson preparing for a presentation will use the services of an internal graphics or presentation consultant, who will advise on effectiveness – the best kind of charts, the best colours and design, and generally adding graphics pizazz to presentations.

All of this puts me in mind of a story about my friend Harold and the dangers of embracing a concept too early.

Contrary to widespread belief, modern-day graphics does not start with the Apple II. In one shop where I laboured writing arcane program subroutines in long-dead languages, the ranks of programmers included some demented geniuses who played with digitized photographs from different sources. The photographs were turned into half-tones, pictures composed of zillions of tiny points of varying darkness. Printers then contained only the 26 upper-case letters, 10 digits, and a few other special characters. Differing amounts of darkness for each point on the picture were created by filling each point with a different combination of letters. A very light square might get only a slash, while a very dark one might contain an X, printed on top of an M, on top of a W, on top of a B. (This was before the days when digitizing software and cameras were widely available. I always imagined that the digitizing was done manually, probably by monks or contract programmers. The latter often seemed to disappear suddenly and mysteriously and leave behind these pictures as a kind of bizarre legacy.)

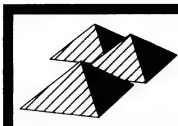
The half-tone data was contained in a deck of punch cards. You produced the picture on the printer by reading the card deck through the card reader. Given the amount of work involved, and the fact that most programmers were male, the most common source of photographs was magazines like Playboy.

Every time Harold printed a new picture, he got requests for more copies. One Saturday morning, he decided to run off a a dozen or two to satisfy the backlog of requests, so he changed the paper in the printer to 5-part (original plus 4 carbons). Then, he set the job to run five times in succession.

As you might imagine, Harold was a technical genius, but, like many programmers in those days, sometimes appeared grossly deficient in elementary skills, such as knowing how to get along with his bosses. The computer room was already backlogged when the system paused and displayed a message on the console to change the paper. One shift supervisor, who was known as a kind of plodding, humourless, strictly-by-the-book kind of guy, dutifully stopped, changed the paper, and then started things up again.

Since this is a family magazine, I won't relate in detail everything the supervisor did, but suffice it to say that for weeks thereafter, the cleaning crew found tiny bits of punch cards in the oddest places. A few years after that, we began hearing odd rumours about that shop – that it never hired anyone who appeared even slightly out of the ordinary, for example, or that it was very conservative about adapting new technologies.

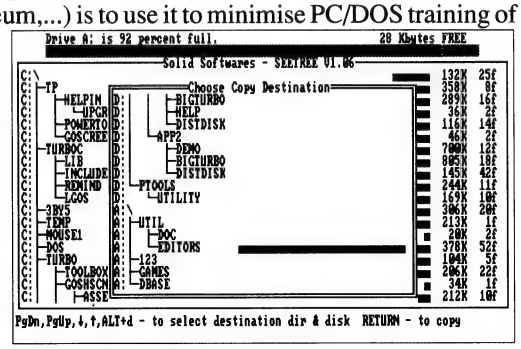
I understand that the shift supervisor eventually rose to become vice-president of data processing for the company, and that only in the past two years – oddly, a period coinciding with his retirement – have computer graphics entered that shop. □



Solid Software's

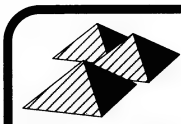
SEETREE ($49)

The design philosophy behind **SEETREE** was to minimise the amount of interaction needed to accomplish the most common tasks of *viewing, editing, deleting* and *copying* of files, between *directories* and *disks* in the most **visual**, intuitive and **error-defying** way. Together with the *creation* and *removal* of directories in a point-and-shoot manner. It uses your editor of choice, from within. It also provides for the selection and execution of other programs or standard DOS commands from within a COMMAND window. It is a simple to use but powerful DOS shell, rich in graphical information, that is small, fast and efficient. Acclaimed by newcomers to DOS and power-users alike. A common theme amongst our bulk purchasers (who include Austrade, ANZ, QLD Museum,...) is to use it to minimise PC/DOS training of staff.



Buy **direct** from Solid Software, P.O. Box 218, Belgrave, VIC., 3160. By Cheque, Visa, Master & Bankcards. Phone orders welcome (03) 7544377.

This is Australian software at an Australian price.



Solid Software's

LOTTOCHECK ($69)

When we designed Lottocheck, not only did we set out to provide a sophisticated data recording and analysis system for lotto numbers, we wanted the program to be a showcase in user-friendliness. And it has paid us dividends in compliments and further sales of it and our other programs. Here are some of our customers **comments** about the program:

'I bought Lottocheck (6-40) from you last Feb. and have been very impressed ever since....I would like to now buy the 6-45 version....I must congratulate you on your excellent programming, presentation and user-friendliness!!!'
A. Garrisson, Kingston, ACT.

'Congratulations on a fine, straight-forward program.'
D. Rivett, Mt. Waverley, VIC.

'Congratulations on your program. Lottocheck has enabled me to cross-reference my theories and has proven to be a valuable asset.'
K. Richards, Morphett Vale, SA.

A number of people have bought further copies as gifts to friends. *All programs below are for the PC XT, AT & clones.*

The $15 paid for DEMO disks is refundable against later full purchase.
All prices below are the FULL prices. **Mail & Phone Orders welcomed.**

Lottocheck 6-45 (Aust.-wide) $69 ☐ Demo Lottocheck 6-45 $15 ☐
Lottocheck 6-40 (NSW GoLotto) $69 ☐ Demo Lottocheck 6-40 $15 ☐
The CAT (*new* Version 4) $129 ☐ DemoCAT (Version 4) $15 ☐
SEETREE 1 copy $49 ☐ 6 copies $250 ☐ 12 copies $400 ☐
I want to pay by_____(Master, Visa, Bankcard,cheque,money ord.)
CardNo:_____ Expiry Date:_____
Signature:_____ Date:_____
Name:_____
Address:_____
Solid Software, P.O. Box 218, Belgrave, Vic. 3160. Ph. (03) 7544377

A decade of graphics!

From Cray super computers to Commodores, computer graphics are certainly coming down market while exploding with power at the same time – Don Searll gives us an overview of the last ten years in graphics.

GRAPHICALLY speaking, it is difficult to pin-point exactly when computer graphics development began. Way back in the '50s, the technical institutes plotted pictures (usually nudes) to adorn their computer rooms. Ivan Sutherland did the most influential work in the field in the '60s and was responsible for giving computer graphics its name. But the main thrust has occurred during the past ten years.

During the mid-seventies the universities of America began the real work and everyone became really excited by the potential of graphics with the advent of faster processing capabilities. This led to a multitude of corporations and individuals researching and developing hardware, software and peripheral systems – from advanced algorithms to paint systems and framebuffers.

The culmination of this enthusiastic era was one of the most fabulous mergers of art and science ever seen. The manpower, hardware and investment of major corporations was staggering as computer graphics reached out and began to influence many major industries. In the beginning, the graphics were mainly vector wire frame models for computer aided design and engineering. Then, the faster computers developed, the faster our expectations of picture complexity grew, and therein lies the Catch-22: the more we see of graphics, the more we want, so that desires can never be achieved, even as we approach the realm of 'super realism'.

Pong

Computer graphics first became visible to the layman through computer games. The first of these was a black and white simulated table tennis game called Pong, which had immediate success in amusement arcades. Space Invaders, and later Pacman, moved the imagery into colour with more complex shapes and movements. The cinematic magic of Star Wars, Tron and the Last Star Fighter created major breakthroughs, as did computerised special effects cameras and optical printers. Then special effects companies started up all over the world and exciting new images started rezzing upon our screens.

The demands of these production companies led to the development of sophisticated, turn-key digital paint and 3-D animation systems. Now computer generated imagery is commonplace, like the highly sophisticated station identification spots we see daily on television. These images are starting to have an impact on our everyday lives.

While the concepts of computer graphics matured, efficient applications lagged behind. The production companies grew and expanded, hungry for faster, bigger and more sophisticated machines, utilising even Cray super computers, until they found that heavyweight hardware was too capital intensive.

The advent of sophisticated software for PCs and the development of powerful workstations gave us computer imagery without the need for a super computer. When we first started in the 70s we had computer scientists and mathematicians writing reams of programs to produce graphics. Today, artists with a minimal background in computers can use the equipment and produce fantastic images in a very short time.

Another problem was that there was a multitude of applications developed or different industries with very little cross pollination. The development of software for desktop publishing seems to have been the impetus behind software integration. After a decade of computer graphics, the dust has begun to settle and the trends are starting to show.

Input

We have several ways of inputting graphical data, depending on the application. The hardware for inputting graphics has only become well-developed in the past several years. Now, digitisers and bitpads are commonly used and the very accurate puck has become a standard tool for Cad type systems.

When it comes to drawing for electronic paint systems, the electronic stylus is definitely the best tool and interfaces perfectly with artists. The high-end pens are responsive even to the pressure applied while drawing so that artists have a tool that is still 'natural' to use. This has further helped opened up computer graphics for traditional artists with little or no computer experience.

Video cameras for inputting graphic images have been around for a while and input low to medium resolution images. The cameras are available at a fairly low cost and can also be used for digitising. This tool is becoming more and more useful as more I/O boards and software support it.

The new wave now for inputting graphic images, however, are flat bed scanners. These can scan in both monochrome and colour with great results. Although the selection of graphics boards becomes critical as to the colour and quality required, they can scan all the way from 16 colours to photographic realism. This has uncovered a whole new realm for graphic and layout artists.

Three-dimensional laser scanners now evolving enable full 3-D model digitising – an engineers' dream! This system not only cuts down enormously on the time for digitising complex objects, but is also vastly more accurate than conventional means. Systems such as these will also become a boon to the computer animation industry.

Output

Thermal printers have advanced considerably and now are pretty acceptable for proofing rough copies and overheads. Dot matrix printers are still the work horses as they are inexpensive and fast, with many supporting graphics – a few of these produce fairly good colour prints.

***Don Searll** has been working in the field of professional computer graphics for over twelve years. While originally from South Africa, he and his wife Jeunesse have their own Sydney-based production company, Holovision, and have experienced first-hand the explosive development in the field of computer graphics.*

Holovison's credits include logos for Channel 10 in Sydney, Channels 7 and 9 in Melbourne, and the Countdown titles and effects for Channel 2 (not to mention this month's cover of Your Computer and the 'Einstein' graphics accompanying Searll's article).

Laser letter quality printers have definitely taken off in the past few years and certainly have the speed requirement for DTP and other graphic applications. Unfortunately, they are still expensive and we are all awaiting colour versions.

Pen plotters can still be a bit messy, but are the standard output for Cad and Cae users as they produce large or small high quality graphic lines and text with no 'jaggies'.

The new output feature that seems to be coming into the fore is the ability for graphic systems to communicate directly with Scitex colour separation computer systems, thus reducing the need to output to film.

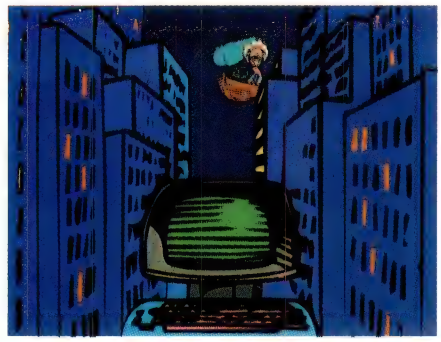
It shouldn't be long before we see software packages that address all the major input and output requirements as a matter of course.

Of mice and menus. . .

Now that we're well into the era of mice, menus and turn key systems the trouble really starts, because there are now far too many computers, workstations, software packages, support boards and peripherals to choose from. Finding a system that best suits our specific application can be a nightmare. The key these days is knowing first what you want to achieve, and then getting the right advice. As users, we expect our advanced tools to be transparent and do multiple tasks.

Today, graphics packages are broken up into many separate categories depending on the specific applications –

Business graphics: Most corporations have come to realise the power of graphics and sophisticated presentations for communicating their messages. Business graphics applications are growing as fast as the number of packages, probably even faster. The latest generation of packages are easy to use and most support a vast range of printers, plotters and high resolution film recorders.



Raster graphics, video and art paintbox tools: The major market for raster graphics has been television post-production houses for the likes of video retouching and title graphics. This market has also developed and grown – the Quantel Paint Box held the edge for a long time, but today there are several newcomers on the scene. All these are pushing for better quality and boasting a better user system. As we move into the digital video arena, this will become even more profound by the provision of more animation and design power.

Vector systems: Most Cad and slide presentation companies use line art vector systems which were more designed for Cad, supporting dimensioning and repeat functions.. These systems support plotters and high resolution film recorders. In addition they have advanced object manipulation without loss of quality. Generally this type of system does not support 'free' drawing and art functions.

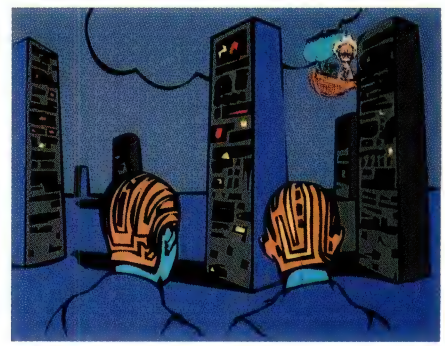
3-D modelling and animation: 3-D computer animation, computer aided engineering and manufacture, modelling, 3-D TV animation and advanced 3-D architectural design systems have grown explosively (and dropped dramatically in price) in the last several years. The quality and development of model building, especially has taken a quantum leap. Today there are a number of super-advanced software systems available for PCs and main frames – all with the power to create a realistic teapot or a yellow ball reflected in a mirror, using a number of (apparent) light, and myriad other 'fx'.

Through the looking glass. . .

Advanced computer graphic animation will soon be indistinguishable from 'reality'; that, together, with sophisticated desktop publishing systems combining photographics, computer graphics, typesetting, layout, and word processing, signals the start of a new era.

The power on PC machines now virtually equals mainframes; while, some graphic systems are dedicated, most are based on standard MS-DOS or Macintosh systems.

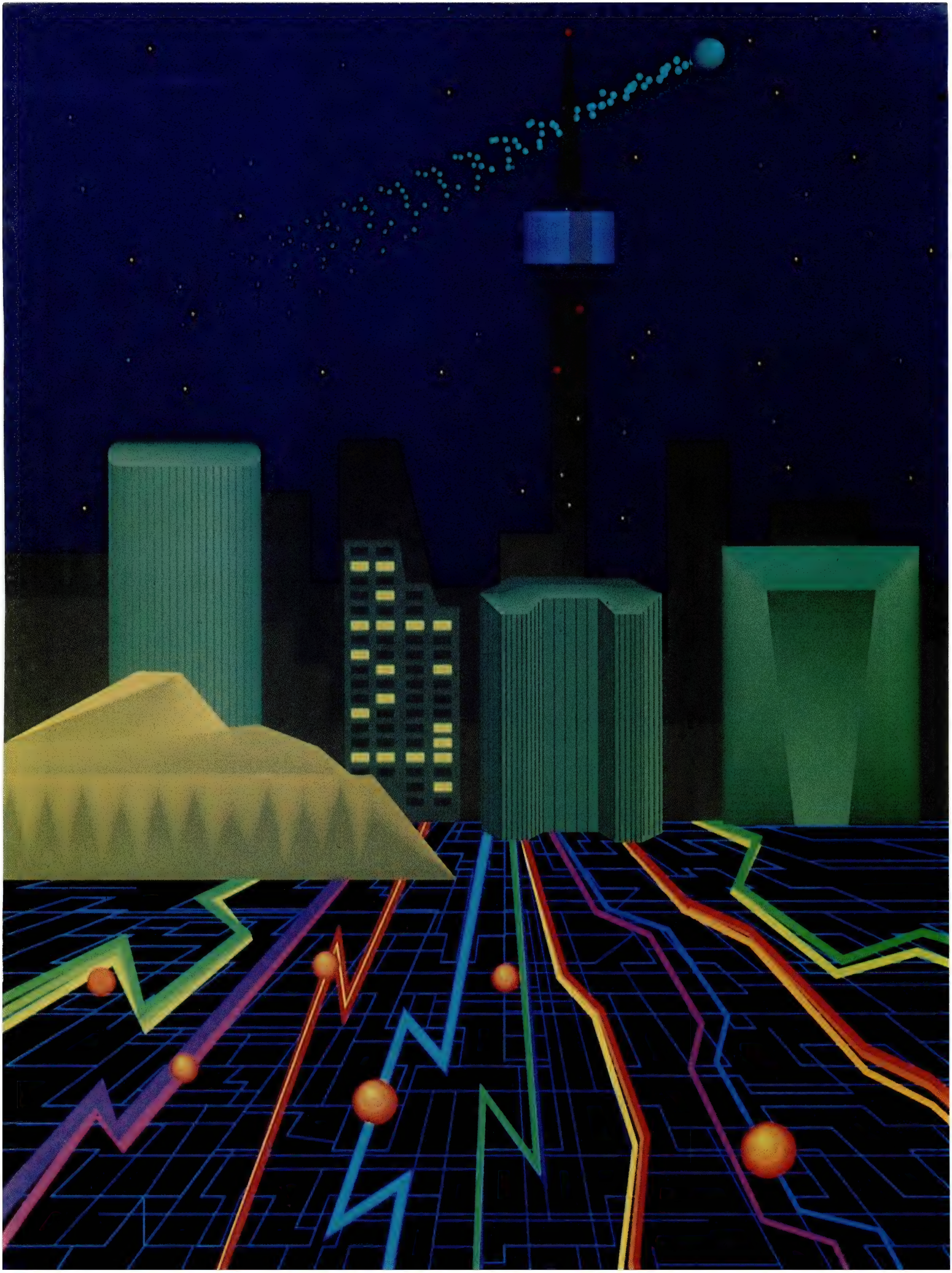
Formally only found in the realm of super computers, big mainframes and



VAX 11/780s, advanced graphic tools such as ray tracing animation, can now be found even on Commodores. In just a few short years, PCs have moved up to the incredibly high speed of super computers, transputers and parallel processing. Here we are talking of engines with processing speeds of 15 to 1000 million instructions per second! That translates to being able to do sophisticated ray traced realism and flight simulations in real time – and that means you can fly Hans Solo's Millennium Falcon at light speed.

We can look forward to the next generation of high powered computer graphic systems having a price/performance ratio up to ten times better than that of today. These developments will make fluid character animation a practical, creative reality. Already 3-D software puts elements of reality like water, clouds and sunsets into the hands of animators.

Despite all the advances, we must remember that the integral essence in this technological realm is still people – technology is merely a tool for creative humans to express themselves. □



Australian Video Festival

The Third Australian Video Festival covered computer and video graphics, animation and creative production techniques. Robert Thirlwell reports . . .

THE THIRD Australian Video Festival was held in Sydney over two weeks in late August to early September. In the first week, screenings were held at the PowerHouse museum, and in the second week, at the Chauvel Cinema in Paddington.

Other major events included six video installations at various venues by major Australian and overseas video artists – Jill Scott, Joan Brassil, Jeffrey Shaw, Nan Hoover, Shigeko Kubota, and Bill Viola. Video artists are a growing breed: in the catalogue, there is a listing of over 70 video festivals in the UK, Canada, US, Japan, and most significantly, the European centres that have been promoting video screening for several years, such as Amsterdam.

A video artist uses video as an expressive medium in preference to pencils, film, still photography, oil paint, marble, or etching. Video is often used in conjunction with other media in a playful experimentation, depending on the effect required. The artist may use various methods of sound recording, including digital sound effects, and can combine computer generated graphics with video imagery via a piece of hardware called a genlock or a frame grabber.

Commercial video and computer generated graphics are represented each year, with entries from leading production studios. These companies are primarily concerned with the world of advertising, and are responsible for production of television station identity logos, program introductions and, of course, the ads. This year, the Australian Video Festival Award for video graphics went to the Video Paint Brush Company for the ABC station identity logo series. The award was sponsored by Sony Media Products Division.

'Going to the Heart of the Centre of the Garden of Delights' – a real-time computer graphics installation by Jeffrey Shaw shown for the first time in Middleburg, Holland, 1986. The images are triggered as the spectator passes infra-red sensors while walking towards the screen.

Forums tend to uncover issues of the time, and the Computer Graphics forum was no exception. Simon Penny, who chaired, began with the suggestion that

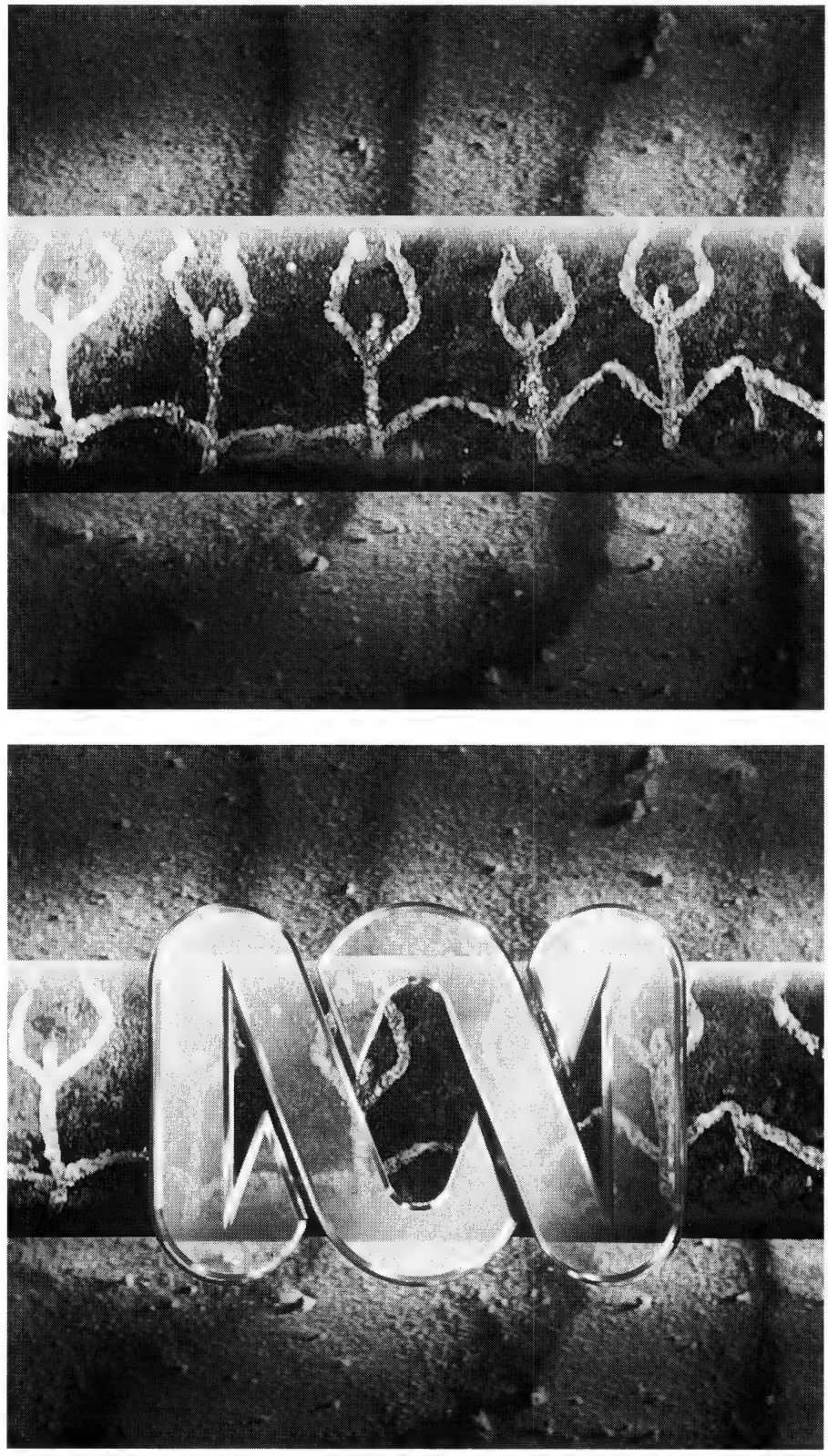
If this is the state of art, I can't wait to see more!

the commercial computer graphics industry suffers from a technological fetishism, and that it was time we saw the endless rolling of corporate logos into deep space on our TV screens being subjected to some aesthetic criticism.

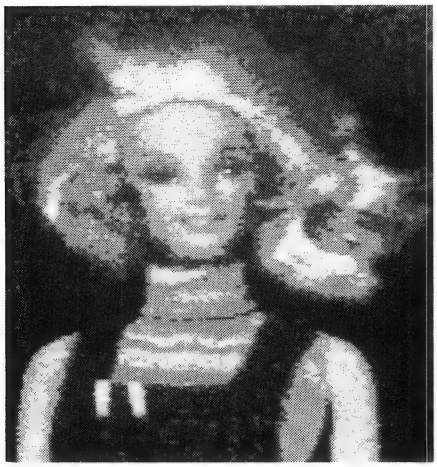
This issue was taken up by several of the speakers. Michael Murray, Creative Director from the Video Paint Brush Company couldn't agree more. Little wonder, since his company made the excellent series of station identity graphics for the ABC, which are remarkable for their subtle mixture of background and foreground, and the absence of jingoism and or logo rocketing through space. Mr Murray explained the creation of the series as a team effort, with David Patton as the Producer. The ABC wanted something that would identify it as being different from the other TV stations, and as being distinctly Australian.

After much discussion, they decided to reverse the usual state of affairs which has the TV station logo hitting you in the face in roller-coaster fashion as the most important element. The Video Paint Brush Company decided to give primary importance to the background instead (the red desert sands, or a close up of embers, or ocean waves), then introduced the foreground logo into the background in a quiet and subtle way. They wanted the audience to identify with the background first, and then to associate this with the foreground logo – a series of logos in the form of three horizontal bars appears, each with a different background. According to Murray, this encourages audience participation, in that people tend to watch for the differences in the series and choose their favorite. This is a good example of 'Design for Television', he says.

The backgrounds for the logo series were filmed and transferred to one inch video tape. The video images were then fed into 'Harry', to convert the analog video into digital form. The 3D animation sequence of the ABC logo tilting up into view was made on an Iris super mini computer, and the two joined together using Matte shapes (like black holes) in 13 passes, again using Harry – a digital compositing system made by Quantel. This method allowed several different versions to be made using the same overall format.



Two versions of the ABC logo series that won the Australian Video Festival Award for the Video Paint Brush Company, Sydney.



'Digital Dolls' by Sally Pryor was produced on a Commodore Amiga and a 35 mm transparency was prepared for us with a Neriki Image Master.

Affordable Graphics

Unless you are an advertising agency or television station (or very well off), you could hardly afford to have a Quantel Paintbox at home for editing advanced digital effects. However, there are more affordable formats, such as video-8, with access to a shared editing facility. The Amigas and Ataris have broadened the possibilities with commercial paint and animation packages. Add a genlock such as Neriki's Pro Video Plus, and you have a workable solution, which may not please a television producer, but are popular with artists and colleges. Add a midi system, and you have all you need for full inhouse production.

Sally Pryor is a computer graphics artist with a background in computer science. She attended the Swinburne Computer Animation course and worked in the U.S. as an animator for two and a half years. She has also worked for the Video Paint Brush Co. and now teaches part time at the Sydney College of the Arts and works as a consultant. She has experience from both ends of the scale, and spoke about the various possibilities within each. Her video production, 'Computers Are Fun' (produced on the Quantel Paintbox) featured a Barbie Doll 'playing' with computers and video production.

Ms Pryor remarked on the differences between 2D production using digital paint techniques and 3D production using animation. The 2D systems are easy to use, with the computer mimicking traditional painting methods – the artist's task is made even easier with tools like the 'undo' button: if you don't like your last wild stroke of experimentation, undo it. Digitizing photographic and real objects into the paint program opens up other possibilities for people who can't draw.

3D systems on the other hand, are harder for artists to use since they require a different user model. You have to be able to think spatially. Everything, including lights and the camera is quantified in terms of cartesian co-ordinates (x,y and z axes). Pryor said the future holds exciting possibilities, as artificial intelligence techniques and procedural modelling are applied to 3D animation. She also mentioned that interactive art will be used much more, with computers providing a 'virtual space' in which the audience 'moves' – spectators don special 3D glasses and gloves with sensors connected to a computer. The computer models a three dimensional space that appears through the glasses, so that spectators may feel 'convinced' that they are picking up an object.

In keeping with the Digital Future theme, Bruno Nicoletti from XY ZAP in Sydney spoke about what he saw at this year's Siggraph (graphics special interest group) in the US. XY ZAP is a Sydney advertising agency using a Vectographics terminal running off a mainframe computer for rendering, animation and object modelling.

Among other things, they produce advertisements and television logos that move around smoothly in three dimensions. Mr Nicoletti said that the computer creates a universe in three ways: the first is rendering, and the second is animation, which still takes a lot of computer time. This will change over the next five to ten years as artificial intelligence techniques are applied. He said that the artist will become more of a director, and will be able to say 'walk from A to B' and the computer will do the rest.

The third way a computer creates a universe is through object modelling, and this year at Siggraph, new modelling tools were shown, including the ability to simulate fire, trees and leaves.

Toothpaste

In the past, computer generated graphics appeared hard opaque, transparent and shiny – all 'hard' attributes. Now it is possible to model 'soft' things as well. Some of these were shown at Siggraph, including worms and snakes that move convincingly; soft bouncing balls that deform on impact, and guitar players made of toothpaste. These modelling techniques are made possible by software that can imitate effects such as gravity using artificial intelligence.

Jeffrey Shaw, born in Melbourne, and now working in Amsterdam, showed a very impressive series of videos that document his work over the past five years with computer graphics and interactive installations. He has been fortunate enough to have access to sophisticated graphics equipment, such as the Quantel Paintbox and the Mirage for animation and real-time computer displays. This has been made possible through a series of commissioned works in conjunction with various museums (which follows a tradition we lack in Australia).

His latest work, 'Heaven's Gate', was installed at the PowerHouseduring the Video Festival. It is viewed by looking up towards the ceiling, where the images are reflected in a suspended mirror. Produced using a Mirage effects generator, it was inspired by the European tradition of ceiling paintings in cathedrals and other large buildings. A soundtrack by Harry De Wit accompanies the piece. The PowerHouseinstallation consisted of a bank of nine monitors, which didn't do justice to the graphics – a video projected version at the Chauvel Cinema looked a lot more convincing.

Swimming in Pixels

In fact, Heaven's Gate is a beautiful work: an image of a domed painted ceiling gradually dissolves from the centre outwards into a myriad of colourful pixels that float around and re-group into another image of a different ceiling. Then that ceiling wraps itself into a floating hemisphere which turns inside out to form yet another image. The process continues with pixels spurting like a fountain and floating down to settle on an imaginary plane. Transparent effects and fantastic wrap-around images make the whole experience analogous to viewing the dizzying heights of a domed space inside a grand building.

If this is the state of art, I can't wait to see more! The whole computer and video graphics industry is still in its infancy, and with the development of artificial intelligence techniques, interactive videodisk systems, and interfaces that don't rely on keyboard inputs, there are opportunities for more people to be more creative. The digital future is full of exciting possibilities for artists and spectators. □

CHOOSE ANY 3 PROGRAMS

FOR ONLY $9.00

Plus free membership to

CHOICE MARKETING SOFTWARE CLUB

TELEPHONE (09) 459 8894 FACSIMILE (09) 481 0074

CM100 PowerMenu — Dos Menu program with built-in file manager.

CM101 Intelli-trieve Weighted-retrieval for dBase III+.

CM102 Ez-Form — Create new forms or modify existing ones to suit your needs.

CM103 Q-Modem — Full feature communication program.

CM104 PC-Prompt — You will never forget the right format for entering Dos Commands again.

CM105 PC-Deskteam — Calculator, calendar, Dos util., notepad, etc.

CM106 Word Processing for Kids — A word processing program designed for kids.

CM107 Origami — Teaches you the Japanese art of paper folding.

CM108 Arcade Games Collection — An assortment of the finest 'arcade type' games including Scramble and Donkey Kong.

CM109 ImagePrint — Allows you to produce letter quality print on your Epson or compatible printer.

CM110 ProComm — Communication program that allows you to go to Dos without terminating.

CM111 Sidewriter — If your report won't fit into a page, print it sideways.

CM112 PC Outline — Resident outlining program.

CM113 PC Style — Writing analysis program.

CM117 PC-Stock — Plot stock analysis graphs on monitor or printer.

CM119 Basic Games — Various games in Basic including Bowling, Keno, Spacewar and more.

CM120 Desktop Publisher — Publishing program for newsletters or simple applications.

CM121 LottoPro — Helps analyse Lotto trends.

CM122 Bookkeeper — A complete financial tool for business and personal use where complex accounting software is not needed.

CM123 Poker Anyone? — Five card draw poker against the computer.

CM124 Duke Language Toolkit — Create foreign and other fonts for EGA.

CM125 Record Collector — Professional level music cataloguing program. You find song by title, artist, label, producer and many more.

CM126 HDMIII — Hard disk menu system up to 10 menus/10 selections.

CM127 Lititgex — For keeping track of legal research, evidence, etc.

CM128 ABC Fun Keys — For ages 2-5; learning alphabet keyboard.

CM129 AnyWord — Text file index retrieval system.

CM130 PC-Flow — A flow chart designing program.

CM133 T.O.P. — Over 40 procedures and functions for Turbo Pascal 4.

CM134 Bradford — Letter quality fonts for Epson MX and FX.

CM135 Weight Control — Assists you in diet with info about dieting, self test.

CM136 Context & Snipix —Superimpose graphics onto text for use in desktop publishing.

CM137 Beginning Sound — Helps pre-schoolers learn to read.

CM139 Grab Plus — Automatic envelope addressing utility and address database.

CM140 Formgen — Design forms for home and office.

CM141 Trilogy — Note storing and retrieving utilities for writers and others.

CM142 Domino — Play dominos against the computer.

CM143 Styled — Writing analysis program.

CM144 Card Track — Credit card statement analysis program.

CM146 Manage — Improve your management skills by answering questions on various management topics.

CM147 Automenu — Dos Menu Program.

CM149 As Easy As — Lotus 1-2-3 look-alike.

What our customers say:

"Once again, compliments on the prompt execution of orders." — M.M., Fremantle.

"I would also like to pass on my thanks for what must be one of the best value software packages (service) to be found within the marketplace." — M.A., Traralgon.

"... am eagerly awaiting the July Software of the Month." — D.D., Tamworth.

Choice Marketing Software Club's "Value for Money" package includes:

- 10 days Free Trial. You may examine the programs in your own home and, if not completely satisfied, return them within 10 days. Your membership will be cancelled and you will owe nothing.
- Free Membership. There are no annual membership renewal fees — as a member you need buy only 4 program diskettes at regular low club prices of $10 during the coming year. You may resign any time thereafter or continue to enjoy club benefits as long as you wish.
- Free Newsletter. Every month you will receive the club newsletter PD SOFT which will cover the software selection of the month, reviews, and the latest sharewares and public domain programs as alternatives.
- Every month you will get a selection of the latest and the best programs automatically. Each month more than 500K of the best programs are compressed into our monthly selection. You need do nothing; they'll be shipped to you automatically. If you don't want a selection, or prefer an alternative, or no software at all, just fill out the convenient form always provided and return it to us by the date specified.
- Access to thousands of good quality software programs at the cost of $10 per disk plus $3 shipping and handling charges. The cost of $10 covers duplication costs, advertising, upkeep of library, computer equipment, newsletter, staff wages and sales tax. Some of the software in the library is subject to additional registration fees payable to the author for regular usage of their program. It's a case of you pay the registration fees if you like it, if not you don't, but you may still keep the program.

Mail to: **FREE POST A13**
CHOICE MARKETING SOFTWARE CLUB
PO Box 648, Gosnells WA 6110

Yes! Please accept my application for membership in the **Choice Marketing Software Club.** Send me the 3 programs whose numbers I have indicated in oxes below plus my FREE membership, for only $9.00 plus $3.00 shipping and handling.* I agree to the Club Plan as described in this ad. I will take 4 more programs at regular low Club prices in the coming year and may resign at any time thereafter.

I wish to receive the 3 selections marked in the boxes provided:

Diskette Size: ☐ 5¼" ☐ 3½" *
*($19.00 + $3.00 Postage & Handling)

NAME _____
(please print)

ADDRESS _____

SUBURB _____ STATE _____ POSTCODE _____

Enclosed please find my payment as follows: Cheque / Money Order/ or please charge my Visa / Bankcard.

Card No.: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Expiry Date: _____

SIGNATURE
(If under 18 parent must sign) _____

YC/12

Graphic Products

As computer hardware develops in power and sophistication, so can the software – nowhere is that more manifest than in graphics-related products, whether they be for serious engineering applications or simple business graphs. On the following pages is some of the more stimulating graphics (and Cad) related software we've seen recently – some of them are state-of-the-art, and some are new versions of old friends, but they are all worth a look if you're in the market. If you're serious about graphics, you'll probably be serious about monitors, too, so we've included a brief look at some of the newer models (and a $25,000 thermal printer!).

Hewlett-Packard Video Graphics Subsystem: Designed for business and entry-level Cad and Cae applications, the Video Graphics Subsystem comprises either a high resolution colour monitor, or a monochrome capable of 64 shades of grey and H-P's Video-graphics adapter (VGA) card. The standard VGA card comes with 256 Kbytes of RAM and is compatible with software written for MDA, CGA, EGA and Hercules standards; the viewing area is automatically adjusted to accommodate applications written for the various standards. It offers resolution up to 800 *x* 600 pixels and can display up to 132 columns of text. An enhanced VGA card (with 512 Kbyte RAM) and H-P's new Video-graphics colour monitor (with a 0.28 mm dot pitch) can display up to 256 colours simultaneously while in 640 *x* 480 display mode. The Subsystem runs on an HP Vectra or compatible.

From: Hewlett-Packard; 256 Kbyte VGA card $866, 512 Kbyte VGA card $1162, Colour display $1339, Mono display $463

Lumena/Crystal 3-D Graphic System: The Lumena PC graphics packages are intended for professional use by advertising agencies, graphic and fashion designers, animators and others needing the highest quality graphics on a PC (an AT with 640 Kbyte RAM and EMS memory module are required). Input is through a digitizing pen or scanned images which can then be displayed and manipulated using a palette of 32,000 colours with Lumena's standard 16-bit graphics card or some 16.8 million colours with the optional 32-bit card.

Crystal 3-D provides high resolution, three-dimensional images suitable for animation through two modules – the Modeller is used to create, edit and render 3-D images and the Animator is used for animating keyframes. Images created with the system can be output to digital and analog film recorders and thermal and inkjet printers; direct digital to digital colour separations are also available.

From: HiSoft; Lumena/16, -/32 $4550, PAL version $7880; Crystal 3-D Modeller $8300, Animator (includes Modeller) $19,500. All prices untaxed.

Artisan: Intended for use by graphic and commercial artists and designers, Artisan software is used to create or modify illustrations. The package supports 16.7 million colours and includes full typefont and text manipulation, toning, highlighting and single pixel magnification and editing; it can simulate airbrushing and masking. Images from Cad packages can be imported either through scanners or directly from the screen. Output can be sent to a laser or colour printer or slidemaker.

Artisan Version 2.0 includes 'what-if' graphical comparisons (a feature that automatically recalculates and rescales a graph as the raw data is changed), and a text editor and text flow control aimed at use with design visuals which need small areas of descriptive text such as advertisements, packaging and front covers. A photograph retouching facility is also included.

From: Comprador; $6000

Xcellerator 1600 monitor: For use with an AT, 386 or PS/2, the Xcellerator 20-inch display offers either 1600 *x* 1200 dpi in 16 colours from a palette of 4096, or 1024 *x* 768 dpi with 256 colours from a palette of 16.7 million. Using a Texas Instruments 32-bit graphics processor, the monitor can achieve continuous drawing in excess of 80,000 vectors. It includes 1 Mbyte of display RAM as standard (expandable up to 8 Mbyte).

From: Comprador; $16,819 configured with 2 Mbyte RAM and accelerator card

Advanced Magician: Based on the well-known Australian PC graphics package, the Magician, Advanced Magician is a new product addressed to the business graphics market. It offers high resolution chart types and a library of figures and symbols, ranging from miniature computers and arrows to business notations. As well as supporting most popular laser printers and plotters, it includes a printer driver editor to create and modify definition files for any type of output device used by the package. An upgrade from the standard Magician is available for $420.

From: Sourceware; $850

Conrac Auto-Trak monitor: The 19-inch, high-contrast Conrac 7250 supports MDA, CGA, EGA, PGA and Hercules standards in both high resolution and emulation modes with a resolution of 1024 *x* 1024 pixels. The Auto-Trak feature automatically locks the monitor into a wide range horizontal scanning frequencies (15.75 to 37 KHz); vertical frequencies are adjustable from 47 to 80 Hz.

From: Magnatech; $4200

Multisync XL monitor: Designed for Cad/Cam work, the 20-inch XL offers a resolution of 1024 *x* 768 pixels. It can be used with IBM compatibles, as well as the PS/2 and Macintosh II, and can be driven by most colour graphics boards. The monitor automatically scans horizontal frequencies from 21.8 to 50 KHz and can scan vertical frequencies from 50 to 80 Hz.

Two other Multisync monitors are available – the 15-inch Plus, with a resolution of 960 *x* 720 and a horizontal scan range of 21.8 to 45 KHz; and the II, offering 800 *x* 560 and 15.5 to 35 KHz.

From: NEC; Multisync XL from $4995, Plus $1995, II $1250

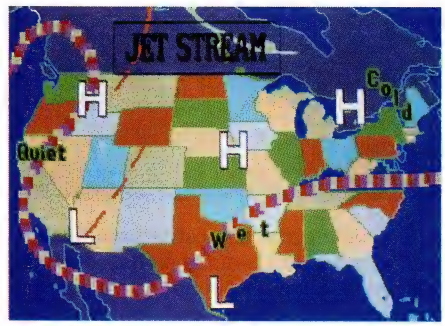
ComputerEyes: ComputerEyes is a video digitizing system that offers an economical way to capture real world images on computer – it's compatible with many popular graphics packages like Dr Halo, PC Paint, Show Partner, PageMaker, Ventura and Storyboard. Input is through a slow-scanner that connects the PC to any standard video device. An A4-sized image can be scanned in 6 to 12 seconds and captured with a resolution of 640 *x* 200 with 64 shades of grey.
From: Replex; Apple II, Commodore 64/128 and Atari systems $349; IBM $525; demo disk $5.

Show Partner F/X: Designed for the professional and corporate user, Show Partner F/X incorporates the modules from Show Partner Version 3.0. These modules can capture snapshots of graphs from Lotus 1-2-3 and drawings from AutoCAD and a variety of other programs, as well as importing images from Windows applications; they also include a slide show editor for assembling a presentation, a script editor and a memory resident paint program.

F/X adds a more powerful script editor, a TSR run-time module and utilities for converting images from a number of applications. Also included are TextPaint, which creates an 80-column text screen to use with the presentation and Master Maker, which produces an encrypted master distribution disk.
From: Technical Imports; Show Partner $350; Show Partner F/X $670

RedCad and CadStar: RedCad (from UK-based Racal-Redac) is an integrated package for PCB design. It covers all aspects of design from schematics to board layout to camera-ready art, and can handle multilayer boards. One of the package's features is that it allows large projects to be broken into 50 sheets for design, debugging and redesigning in manageable portions. RedCad also features a sophisticated auto-routing facility and integrated editor as well as automatic assignation of part names and pin numbers to the drawing.

CadStar incorporates RedCad's features and adds advanced features such as the ability to use SMDs on both sides of a PCB, via miniaturization, 3500 connections per design and an extensive component library. Another feature is 'dynamic rubber banding' which displays traces and connections in motion on the screen for optimum placement of critical components.
From: RCS Design; Redcad $6000; CadStar $15,000



Video Copy Processor: The Mitsubishi CP100B video copy processor uses a sublimation thermal transfer process that gives a resolution of 640 *x* 614 dots with 64 gradations of colour in each dot. Input is by means of standard PAL composite video signals or RGB analog and TTL signals. The CP100B features autoscanning from 15 to 35 KHz, a builtin frame memory, and mirror mode for printing overhead transparencies. Print time for a standard 101 *x* 76 mm image is about 70 seconds.
From: Mitsubishi; $4975 (includes remote terminal)

Thermal Transfer Color Printer: The Mitsubishi G650 can take either A3- or A4-sized paper or transparency film. Using a 3392-element print head, the printer offers a resolution of 300 dpi in a combination of 7 colours. Designed for graphic art and Cad applications such as 3-D modelling, the G650 can output an A3 sheet in about 60 seconds.

A video processing unit, the B350 interface, is also available to output colour hard copy without any special printer software. The interface requires a high resolution display unit with a maximum video frequency of 125 MHz. It features a builtin 2 Mbyte frame memory and editing function to alter horizontal and vertical dimensions, change colours, mirror the image and make copies.
From: Mitsubishi; G650 Thermal Printer $15,900; B350 Interface $9500

LaserView Display System: The LaserView Display System for the Macintosh SE is available with either a 15- or 19-inch monitor; an adapter card is included. The system offers two resolution modes: 1664 *x* 1200 and 832 *x* 600 maximum; other resolutions can be set by the user. The system also features 1 Mbyte of onboard memory, a choice of 3 cursor sizes and a screen saver to blank the screen after a set time.
From: Computhink; 19-inch monitor $6150 (taxed)

ColorMAX Display: Designed for engineering applications, Cad, and presentation graphics, the 19-inch ColorMAX has a resolution of 1152 *x* 870 and offers 256 colours from a palette of 16.7 million. An adapter card is included.
From: Computhink; price to be determined.

Harvard Graphics Accessories: For use with Harvard Graphics 2.0 or 2.1, the accessories include Business Symbols with over 300 new symbols, including computer and telecommunications equipment and various three-dimensional objects; Designer Galleries, offering a number of templates for charts and graphs; and, Quick-Charts with a selection of 125 commonly used charts and graphs. The ScreenShow Utilities (for use with an EGA monitor) comprises a screen capture and show facility, and ShowCopy, which copies a slide show and all its charts from one disk or subdirectory to another.
From: Imagineering; Business symbols, designer Gallery $159; QuickChart, Screenshow, US MapMaker $239

VersaCAD: VersaCAD is an integrated Cad package for either IBM compatibles or the Apple Macintosh offering a full range of features including 2-D drafting and 3-D modelling, plus a builtin capability to communicate with mainframe Cad applications and output drawings in text format for sending over a telephone line or to CAM software. Bills of materials can be automatically generated from the drawings and presentation graphics can be output to a film recorder, plotter or printer. It features off-line printing that allows a minimally configured computer to be used as a plotting workstation.
From: Imagineering; IBM-compatible version $5599; Macintosh $3215

ComicSetter and MovieSetter: Developed for the Commodore Amiga by California-based Gold Disk, ComicSetter generates colour comics using the standard comic strip elements – a library of characters of backgrounds are supplied with the package. Any number and size of panels can be placed on a page complete with speech balloons, characters, and backgrounds. The program supports IFF graphics and requires 1 Mbyte of RAM. To complement ComicSetter, Gold Disk has also released ComicArt – a series of modules focusing on particular themes. The first three modules released feature super heroes, science fiction and funny figures.

MovieSetter (from the same developers) is a true WYSIWYG animation program, it's also for the Amiga. The program approaches animation from the conventional animator's perspective: characters and objects are moved around the background scene. A series of professionally drawn 'movie-clip' files are included and users can develop their own 32-colour images. Features include color cycling, sound generation, playback at up to 60 frames per second and full support of IFF.
From: Commodore; prices to be announced.

Photographics 3000: Using a palette of 16 million colours, Photographics 3000 produces full colour pictures for output to a film or video recorder, or colour printer. Input can be from the keyboard, graphics tablet, colour scanner or RGB camera. The software was designed to merge charts or graphs with a photograph, retouch photos, or add text to an illustration. The PC-based system supports any graphics program that can produce SCODL files. A Targa graphics board and 4 Mbyte of RAM are required.
From: Vision Control; $75,900

ColorMetric 20: This full length card is used with an XT- or AT-compatible and a graphics package to create high resolution graphics, using a palette of 1000 colours. It is intended for use with the General Parametrics range of products, which feature freehand drawing and mapping, clip art and symbol libraries, and Cad and spreadsheet interfaces. Microsoft Chart,

Ashton-Tate ChartMaster and a wide range of other graphics software is supported.
From: Imagineering; $4625

Data-C 14CH115 monitor: With a horizontal scan frequency from 15.5 to 35 KHz, this 14-inch TTL colour monitor has a pitch of of 0.31 mm and a resolution of 800 *x* 560. It supports graphics in 8 or 16 colours from a palette of 64.
From: Atlantis; $999

Logitech Generic CADD: The basic program provides drawing commands, object types and editing functions and features the ability to work with a number of layers, a selection of fonts, zoom functions and various utilities. Add-on Productivity Modules can be used for printing, automatic dimensioning, specialized geometric construction and editing aids, and creating solid or hatched areas within the drawing. Modules are also available for transferring files in either DXF or IGES formats. The program supports a number of graphics boards and requires 384 Kbyte of RAM; a maths co-processor is recommended.
From: BJE; bundled with Logitech serial or bus mouse as LogiCADD $362

Logitech PaintShow: This mouse-based paint program offers 8 fonts, 16 colours and a SlideShow utility. The Catch utility can be used to captures graphics from such programs as Lotus 1-2-3 and Microsoft Chart, import them into PaintShow and add enhancements. The Conversion utility allows importing TIF, PCX and MAC files from desktop publishing applications for embellishment.
From: BJE; bundled with Logitech serial or bus mouse $296

Logitech HiRez Mouse: Supported by all applications that use the Microsoft mouse driver, this serial mouse can register 320 dpi, needing about half of the area for movements as a 200 dpi mouse. The included software can be used to build pop-up menus, emulate cursor keys and run keyboard macros for non-mouse applications.
From: BJE; $225

Idek MultiFlat monitor: Featuring a 15-inch flat screen display, this analog and TTL monitor can be used with an Apple Macintosh II, IBM PS/2 or XT/AT-compatible. The two models of the MultiFlat have a dot pitch of 0.26 mm and a resolution of 1024 *x* 768 or 800 *x* 600. Both models offers automatic frequency scanning between 21.8 and 50 KHZ and supports EGA, PGC and VGA.
From: Skai; $2015 for 800 *x* 600
$2495 for 1024 *x* 768

Roland DXY series plotters: Replacing the well-known DXY-800 and -900 plotters the DXY-1100, -1200 and -1300 feature micro-stepping motors and twin-belt drives that give a pen speed of 420 mm/-sec and a mechanical resolution of 0.0125 mm. Top of the range is the 1300 model which features a 1 Mbyte data buffer, a replot capability that works without connection to a computer, continuous XY co-ordinate display and the ability to manually select pens.
From: Roland DG; DXY-1100 $1995, -1200 $2495, -1300 $3495

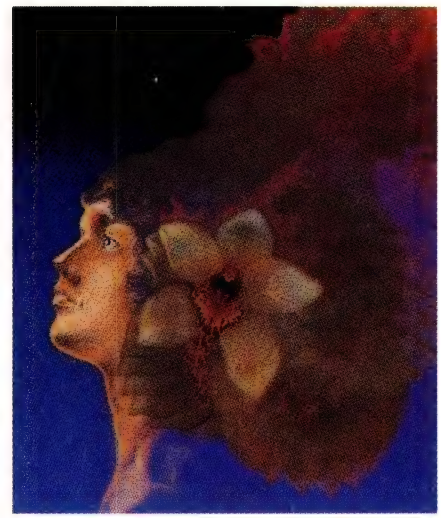
Roland CAMM-1 signmaker: Accepting output from a range of Cad systems, the CAMM-1 outputs to self-adhesive vinyl or paper up to 500 mm wide. The system can be used to produce cut-out letters and graphics. Included are more than 200 type styles that can be edited.
From: Roland; $6750

Drawbase: Designed to integrate drafting graphics and data management, this Cad package features the ability to track non-graphic information assigned to graphic elements such as quantities and costings. The data management system automatically updates specified reports (such as the number of parking spaces required, costs and changes in furniture requirements) as graphic design elements change. Add-on hidden line removal and shading modules are also available.
From: ECS; Drawbase 2000 (2-D drafting and macros) $4323, Drawbase 3000 (adds 3-D wire-framing) $6210, Drawbase 4000 (2000 plus integrated database) $7998, Drawbase 5000 (all the forementioned) $9684

Teco VGA monitor: Offering a resolution of 720 *x* 480, the Teco TE9513 is a 14-inch analog monitor with a dot pitch of 0.31 mm.
From: Teco; price not supplied

Everex Micro Enhancer Cards: These intelligent half-slot EGA cards extend EGA resolution to 640 *x* 480 and 752 *x* 410. The cards can also display Hercules 720 *x* 348 monochrome graphics on a monochrome EGA or multifrequency monitor. The Deluxe card has a printer port; the standard card has an RCA jack.
From: Everex; Standard card $569, Deluxe $599

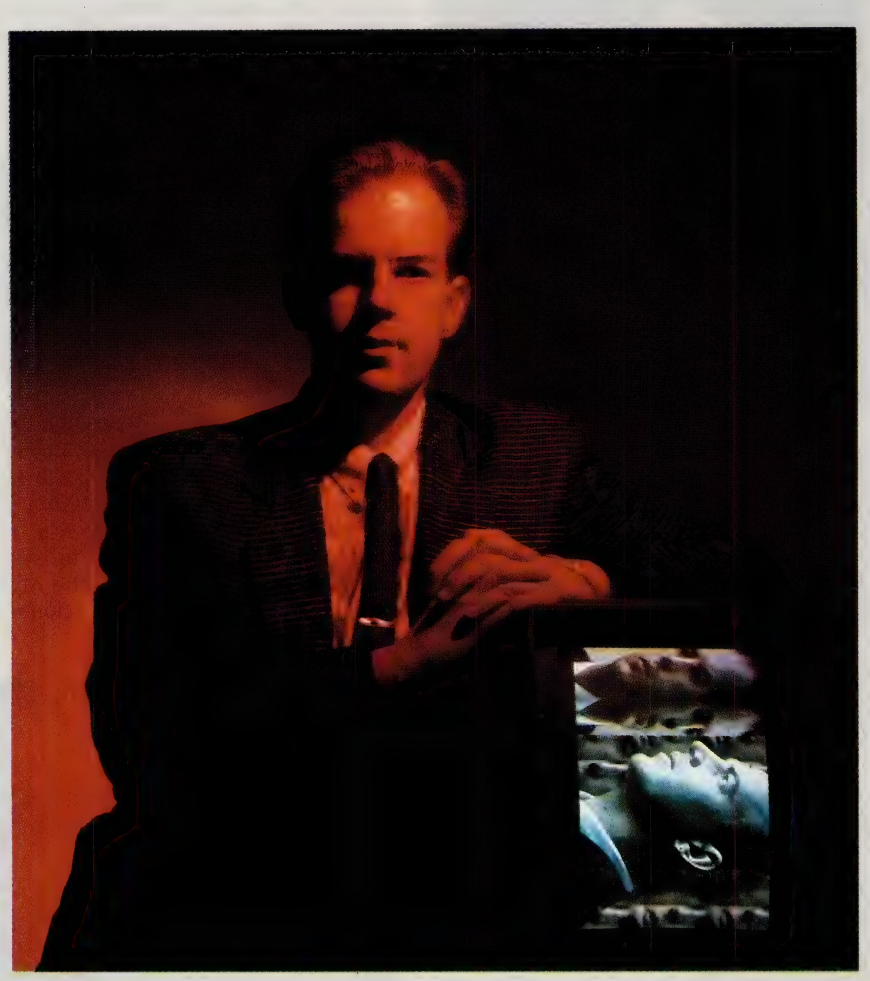
ADE-70 Multiscan monitor: CGA, MGA, EGA and VGA compatible, this 14-inch colour monitor has a resolution of 820 *x* 620 with a dot pitch of 0.31 mm. With a scan frequency of 15 to 35 KHz, the ADE-70 is fully compatible with NEC's Multisync II. Cables available to suit PS/2 and Macintosh as well as XT, AT and 386 clones.
From: ADE; $1170 untaxed



LaserJet Typefaces: Digi-Font has released a range of over 270 scalable fonts to suit Hewlett-Packard LaserJet emulating printers. The fonts can be scaled from 3.0 to 720 points in 0.1 point increments; each face only requires about 20 Kbyte of disk space. The package includes the Font-Maker conversion program for creating bit-mapped fonts from the Digi-Font library; the library fonts can then be made wider, narrow, rotated, flipped, slanted or

An effective computer graphics system

Mark Richards of Dimension Graphics offers advice on graphics vendors and their wares.



Mark Richards, Marketing Communications Manager of Dimension Graphics, is recognised as one of Australia's leading authorities on personal computer graphics and presentation graphics. He has specialised in this area since completing a Computer Science degree at the NSW University of Technology. During his five years at Dimension Graphics, Richards has sold, evaluated, taught, presented, ate and slept computer graphics, working on a variety of machines, from mainframes to PCs.

The selection of computer vendors and their wares is no simple matter. It requires careful evaluation of not just the products themselves, but also the vendors who supply them. Evaluation and purchase is not the end of the story either. To not consider the implementation of new technology into an organisation can mean, at the very least, that the new products are not used effectively, and at the worst, that they are not used at all.

Nowhere is this truer than in the area of computer graphics where the technology is changing so rapidly. Systems generally involve the integration of complex leading-edge technology, and require many pieces of hardware and software from different manufacturers to work together harmoniously. Many purchases are made in good faith after vendor demonstrations and yet the systems are never used effectively because the various parts could not be made to work together properly.

Computer graphics covers a very broad range of applications such as presentation graphics, CAD/CAM, electronic publishing, video animation, integrated circuit design and many, many others. Most computer systems now utilise graphics-based user interfaces. Microsoft Windows, OS/2 Presentation Manager, Apple's Finder, X-Window and others are all based on computer graphics.

Despite this broad spectrum, I believe that some general rules can be applied to the selection and introduction of computer graphics hardware and software to ensure their productive use over an extended lifetime.

Understand your needs and budget restrictions

It is surprising how many would-be users come to us at Dimension Graphics to purchase a graphics package without fully understanding their users' needs. Although such a prospect may seem an ideal opportunity for a vendor to make a fast buck by dazzling them with capabilities which may or may not be of use, this is my least favourite prospect.

I know from experience that the wide-eyed and smiling person watching the demonstration today will be the disgruntled user of tomorrow.

Before even considering having any products demonstrated there is much that has to be done to ensure that the correct decision is made. You must compile a profile of the potential users and their needs. There are often features which, if unavailable, make a software package useless to the potential user. You should then be able to develop a list of required and desirable features.

Collect samples of what is currently produced manually. Gain an understanding of the potential user's 'computer sophistication level.' And don't forget to look at future as well as current requirements. If appropriate, compile a list of computer systems the users know and are comfortable with and which the graphics software may have to integrate with. What data formats will have to be read? What output formats have to be supported? Understand the environment into which the graphics system will be placed. Is there ample room to set up the system? Are there potential noise problems?

Armed with this information, you are more likely to make a decision that will be accepted and, in the long term, be satisfactory for all users.

It is also essential that you understand your budget restrictions. Your task is going to be to realise the ideal you discovered and still keep within the budget.

Collect product information

Many potential products can be eliminated based on specifications submitted by vendors. Gleaning information from the vendor also gives you an initial opportunity to discover the quality and depth of knowledge of the vendors themselves.

Of course, the risk here is that you may eliminate products which can provide alternative features to address your needs. The key is not to be inflexible. Allow vendors to suggest alternatives.

The considerations that must be taken into account when evaluating computer graphics –

Data Independence: The software must be able to take data from applications currently in use by the organisation. Ideally, users must be able to continue to use tools they are familiar with for data entry and storage and initial graphics specification.

Restrictions: The software must not restrict the volume of data handled or the length of text strings that can be entered, the image complexity, the number of colours, and so on.

Device Independence: Many software packages are limited to a few specialist devices; ideally they must be able to address the currently used devices, those that are available now and are likely to be in the future. These devices should be driven at their full speed, using all the available colours and at full resolution. We've seen many good packages which have been used to drive devices on which they produce very poor images.

User Interface: The software should allow users to work the way they prefer. This may mean using a mouse, menus, commands, or command files.

Standards Development: Many organisations insist on certain standards to be met for presentations, drawings, and other publications. Unless standard templates can be easily set up, this becomes impossible.

Hardware Platforms: Users prefer to continue to use the systems they are used to. It is usually very difficult to convince a Macintosh user to use an IBM PC and vice versa. The same software package should run on whatever hardware is required be it Mac, PC, Prime, DEC, Data General or whatever.

Installed Base: It is not advisable to be the only user of an esoteric software package that no one else is using. The more users there are, the more likely the software will be supported and upgraded. User groups are a great support and forum for the exchange of information.

After narrowing down the field to a few packages which seem to satisfy your requirement, you should ask the vendor to recommend some current users as reference sites. Reference sites can give some very telling insights to both the software and the vendors. Ask questions about support, as well as the software itself. By now, you should have gained a good insight into what the marketplace has to offer, and by constant referral to the potential users, the relative importance of available features.

Product demonstrations

It is important to remember at this stage that you are evaluating both the product and the vendor themselves. A vendor that cannot effectively demonstrate a product will certainly not be able to support it properly. If necessary, attend demonstrations of the same product at a number of vendor's offices. I have seen excellent products made to look very poor by bad demonstrations.

Take data files and samples with you to the demonstrations and ask for them to be imported and produced (it is usually a good idea to supply these to the vendor before hand so that they can get them set up). A canned demonstration with no input from you shows off all the best features of a product, but may not address your needs. Do not be fobbed-off with 'Yes, it can do that. . .now, let me show you this.'

Insist that they show you what you ask, and if it cannot be performed then and there for a valid reason, make an appointment and go back. The demonstration should be performed on equipment matching the equipment you already have or are intending to purchase. Users have often been burned by purchasing software that will not perform satisfactorily on their 'compatible'.

Demonstrations can eliminate many products and/or vendors which clearly do not satisfy your requirements. They can also raise new issues – it's very important to go back to your users with these to glean their feelings. Perhaps there are application areas which can be addressed which were not even considered. This can change the whole understanding of what is desirable. Do not be afraid to re-evaluate your needs and to go back to the vendors with your new requirements.

Evaluate the vendor

It is tempting to see demonstrations at specialist vendors' offices and then to purchase software cut-price from an off-the shelf supplier or mail-order house. I cannot emphasise the inadvisability of this enough. Cut-price suppliers do not have the profit margins to offer the support and expertise to successfully introduce the new technology, educate the users and keep the system running.

Additionally, the broad-based product range offered by off-the-shelf suppliers does not allow them to specialise and to keep up-to-date with current developments in any particular field. We have 'rescued' many organisations who have bought a system worth tens of thousands of dollars and was never productively used. Often the equipment was supplied incompletely and/or incorrectly. In specialist fields like computer graphics, ignorance breeds problems.

The vendor should be able to provide and describe: an ongoing growth path for your investment; education facilities for the users; installation services; hardware and software maintenance facilities; telephone support services; and services to complement any gaps in your initial purchase due to budget restrictions.

Implementation

Once the evaluation phase has been completed, make a decision as soon as possible. Many evaluators delay until the next release or until such and such a feature becomes available when, in truth, if the purchase can be justified now, delay only means more costs.

My one main recommendation here is not to skimp on hardware. Compromises will mean an exponential decrease in performance. Preferably purchase from one supplier who can install, guarantee and support the system. When hardware and software is supplied by different vendors, it can be difficult to get them to work together. Cheap clones and compatibles may be good for word processing, but not for graphics.

Before the system is supplied, though, there are a number of things that you can do to ensure a smooth introduction of your purchase into the organisation. Let the users know what has been decided before it has arrived. Get them excited about it. Show samples, hold meetings and do whatever you can to arouse enthusiasm.

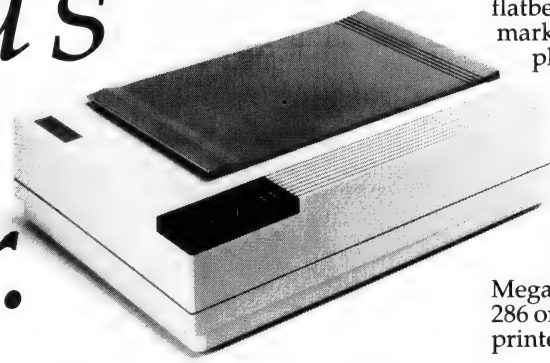
Appoint someone to manage the system. This person should show a natural aptitude towards the system, be enthusiastic and willing to learn. Organise an effective education program. Properly educated users are more likely to accept and use a new technology.

The effective introduction of a computer graphics system is at least as important as its selection. After all, what use is a system that's never used? Many organisations have experienced the phenomenon where the users are at first enthusiastic and eager, but when they start to use it without proper education, they reject it and go back to manual methods. The saying, 'You can lead a horse to water, but you can't make it drink' is very applicable here. You can buy users a computer system, but you can't make them use it.

With some common sense and careful evaluation and introduction, your organisation will enjoy the benefits of a computer graphics system that is happily accepted and used productively.

MegaScan.™

More than the world's fastest publisher.



It's still no contest.

Nobody can beat the speed of a MegaScan-based system when it comes to scanning, manipulating or publishing images, photos and text.

MegaScan, designed by Advanced Vision Research, is the only system that combines a flatbed scanner with interface technology and graphics manipulation software into a single, integrated solution for any application. Desktop publishing, image archiving, OCR input and more.

The scanner: born in the USA.

The MegaScan Image Scanner is the only U.S. designed and manufactured flatbed desktop image scanner on the market today. It can scan line art or photos, at a resolution of 300 dpi and 32 levels of gray. All in just 9 seconds from scan to edit!

The MegaBuffer™. One card. One slot. Two jobs. Fast.

With 1.3MB of on-board RAM, the MegaBuffer is the interface between your 286 or 386-based CPU, scanner and laser printer. It also holds the full-page bit map

---

Softscrybe.™

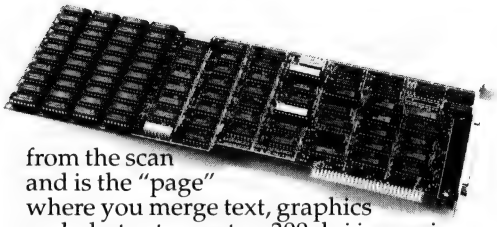
President's alternative to PostScript.®

Softscrybe™ is a PostScript® language interpreter which can interpret PostScript® page description language files and subsequently convert the information to print an equivalent result on an on-postscript® laser printer.

This means that you no longer have to be linked to an expensive PostScript® laser printer for publishing results.

Softscrybe™ is a software package which works in conjuction with the AVR-MegaBufffer™ card which is compatible with any 286-386 P.C. compatible computer.

With the added advantages of MegaScan™ software you can capture your PostScript® orginated file in the MegaBuffer™ and in turn save it in MegaScan™ MSI format which will allow you to print in an amazing 10 seconds after conversion.



from the scan and is the "page" where you merge text, graphics and photos to create a 300 dpi image in true WYSIWYG.

And with the full page in the Mega-Buffer, zooming, scrolling and pixel - editing are real-time operations.

MegaScan eliminates laser-lag too. Because the MegaBuffer's 1.3MB of RAM also acts as a printer controller. So you can print direct to the laser printer engine for full-page 300 dpi output in just 10 seconds. Every time. Regardless of page size. Regardless of printer memory.

The software: power and flexibility.

MegaScan software is a single application providing scanner control, a powerful paint/pixel editor, extensive image processing, text editing, page make-up and a screen snapshot utility. Also included is a RAM disk utility so the MegaBuffer card can support other applications.

Use MegaScan software by itself to create short documents, or as a powerful graphics "front-end" to any GEM® - based publishing program like Ventura Publisher or GEM Desktop Publisher™ for long, complex layouts. File format options include TIFF, .PCX and GEM.IMG to support all other popular publishing applications.

Optimum options.

Optional capabilities include user trainable OCR, PC-to-FAX communications and font creation software to make it eve easier to capture, edit, store, communicate or produce high-quality graphics and text.

More than fast— affordable.

The MegaScan system is fast and affordable. Even if you need just part of the system. For more information fast, call or write

MegaScan and MegaBuffer are trademarks of Advanced Vision Research, Inc. GEM is a registered trademark and GEM Desktop Publisher is a trademark of Digital Research, Inc. ©1988 Advanced Vision Research, Inc.

President Computers have installed complete Desktop Publishing Systems into many Corporates and small businesses throughout Australia. The key to our success is that we provide a "complete tailored system" with the expertise and training which is so vital with these highly intergrated systems.

President have training centre s in four states and are re-sellers of Xerox Ventura Publisher.

Demonstrations conducted daily.

*** Softscrybe Requirements :-**

- 286 or 386 P.C. Compatible
- Minimum 512K Expanded Ram
- Softscrybe Software
- AVR-MegaBuffer
- AVR-Laser Adaptor
- SX or CX engine base laser printer (with video port)

president COMPUTERS

SYDNEY	4762700
MELBOURNE	3470555
BRISBANE	8462228
CANBERRA	804804
ADELAIDE	2313063
PERTH	2276603
GOLD COAST	374788

Please send more information to:

Name _____

Address _____

Suburb _____ P/C _____

Telephone

President Computers Pty. Ltd.
P.O. Box 203 Hornsby NSW 2077.

35 Fonts come standard with Softscrybe™ which can be scaled from O point to whatever size you desire.

Additional font families can be added to your library which are available from ***Compugraphics*** and ***Bitstream***.

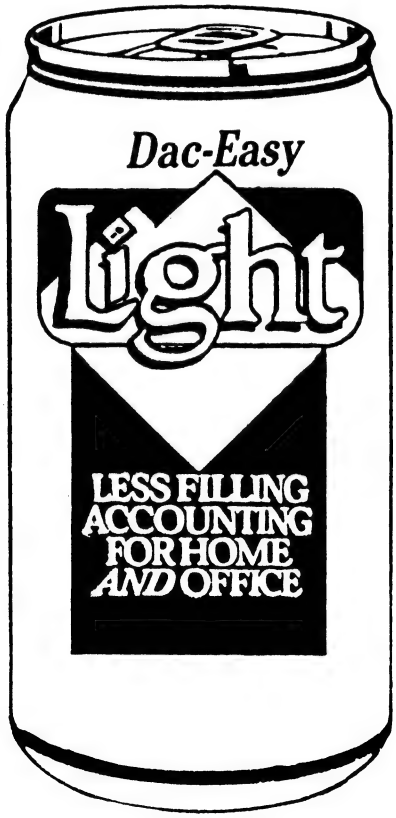
Standard Fonts

Avante Garde
Palatino
ITC Bookman
Courier
Helvetica
Times Roman
ITC ZaftDingbats
ITC Zaft Chancery

Introductory Offer :-

$950.00 ex tax.

A REFRESHING APPROACH TO EASY ACCOUNTING



For Small Business and Personal Finances

- General Ledger
- Creditors Ledger
- Debtors Ledger
- Invoicing
- Monthly Budgets
- Bank Reconcilation
- Activity Reports
- Budgets etc.

All you expect to make accounting a pleasant part of your your busy life.

Comes with full on-screen help as well as your manual and is priced at only

$149.95

CALL NOW:

MACE Software

STD FREE 008-777-509

OR (07) 870-3600

WE ACCEPT □ BANKCARD □ VISA □ MASTERCARD

23 SYLVAN ROAD TOOWONG (BRIS) AUSTRALIA

reversed (in any combination) in both portrait and landscape orientations.
From: Software Express; Basic set of 8 typefaces and FontMaker program $120; with complete library $700; individual fonts available.

GEM Draw Plus: This powerful drawing package for the PC offers over 39 fill patterns, 7 line widths and 8 line styles, and 48 text styles ranging from 7 to 72 points. Drawings can be made either freehand or by combining standard shapes like rectangles and circles; a library of over 100 preprogrammed images is included.
From: Quercus; $450

PC Scan 2000: Image scanning features include 256 levels of grey scale, sizing and scaling (from 13 to 200 per cent), and three levels of contrast control. Resolution is software selectable from 38 to 300 pixels per inch. Hardware options include an IBM interface, Macintosh interface, text processor for optical character reading, and automatic document feeder.
From: Imagineering; $3770

VideoWorks II: This presentation and animation utility for the Macintosh range, comes with 24 tracks of animation and a sound track. Included is a library of artwork, movies and 'clip animation'; PICT, MacPaint, GLUE and various other images can be imported and animated. The package has a wide range of timing and colour options and sound effects.
From: Imagineering; $340

Lotus Freelance Plus: Designed to read, customise and output charts from Lotus 1-2-3, Symphony and GraphWriter, Freelance features single point editing, grids, rulers, zooms and a full-screen cross hair. The package can also be used with ASCII, dBase and Multiplan (SYLK) files.

Macintosh color monitor: The Big Picture C20 20-inch colour monitor for the Macintosh has a resolution of 1024 *x* 808 pixels at 76 dpi. The monitor features a NuBus video controller with a 32-bit data path and 1 megabyte of video memory and a refresh rate of 72 times per second.
From: Imagineering; $995

Distributors

ADE Computers
2 Dublin St,
East Oakleigh 3166 Vic.
(03) 543 2677

Atlantis Computers
49 Wadham Pde,
Mt Waverley 3149 Vic.
(03) 807 7187

BJE Enterprises
35 West Pde,
Eastwood 2122 NSW
(02) 858 5611

Commodore Computers
57 Mars Rd,
Lane Cove 2066 NSW
(02) 427 4888

Comprador Business Systems
90 Warren Rd,
Smithfield 2164 NSW
(02) 681 4000

Computhink
11 Hamlet St,
Cheltenham 3192 Vic.
(03) 584 3188

ECS Pty Ltd
11 Winterton Rd,
Clayton 3168 Vic.
(03) 562 8444

Everex
12A Mars Rd,
Lane Cove 2066 NSW
(02) 427 6111

Hewlett-Packard
31 Joseph St,
Blackburn 3130 Vic.
(03) 895 2895

HiSoft
598 St Kilda Rd,
Melbourne 3004 Vic.
(03) 529 2333

Imagineering
77 Dunning Ave,
Rosebery 2018 NSW
(02) 697 8666

Magnatech
7 George Pl,
Artarmon 2064 NSW
(02) 427 0666

Mitsubishi Electric
73 Epping Rd,
Nth Ryde 2113 NSW
(02) 888 5777

NEC Home Electronics
244 Beecroft Rd,
Epping 2121 NSW
(02) 868 1811

RCS Design
728 Heidelberg Rd,
Alphington 3078 Vic.
(03) 49 6404

Replex
118 Queen St,
Melbourne 3000 Vic.
(03) 670 0687

Roland DG
50 Garden St,
Sth Yarra Vic.
(03) 241 1254

Skai Computers
276 St Kilda Rd,
St Kilda 3182 Vic.
(03) 537 2722

Software Express
48 A'Beckett St,
Melbourne 3000 Vic.
(03) 663 6580
(02) 519 3249

Sourceware
1/8 George Pl,
Artarmon 2064 NSW
(02) 427 7999

Technical Imports
602/220 Pacific Hway,
Crows Nest 2065 NSW
(02) 922 6833

Vision Control
Miles St,
Mulgrave 3170 Vic.
(03) 560 2444

Quercus Distributors
159 Burbridge Rd,
Hilton 5033 SA
(08) 234 1411

Is Cad what it's cracked up to be?

Ray Smith of RCS Design considers the pitfalls and benefits of Cad. . .

IS CAD REALLY what it's cracked up to be? Yes, definitely! However, there are quite a few points that must be driven home before you rush off to purchase a package just like Harry's got.

Computer Aided Design and Drafting is an integrated system, not at all like word processing or desk top publishing. While the hardware might look the same and the glossy promo literature is full of the same cliches such as, 'more productive', 'better presentation', 'higher quality', and the last beauty 'easy to learn', your particular needs will rarely coincide with the ideal presented in the brochures.

In the first instance, if you run an office that is the proverbial bun fight, where all the engineers, architects and draftsman can't agree on the same standards and the office manager seems to spend his entire day running from one screaming disaster to another, then computerization of any sort is only going to send him to the funny farm a little quicker.

And, if you're involved in off-the-wall conceptualizing and the bulk of the staff drink carrot juice, are away with the fairies most of the time and very little ever gets written down, then you will probably gain little benefit from Cad either.

An engineering, design or drafting office that already has an effective and efficient manual system is the best placed to get the most from implementing Cad. Bear in mind what drafting is all about – not only does it involve the accurate presentation in two dimensions of what someone else has to build, assemble or manufacture, it is also the checking of assembly and manufacturing standards, estimating and costing of quantities, and recording issues and changes. If your Cad system doesn't assist with all these aspects then it only gives a part of the benefit.

My experience shows the biggest problem facing new Cad users is a lack of understanding of what they are about to get into. Not only are they faced with learning about one of the most sophisticated drafting tools to confront them since the Rotoring pen, but whether the salesman says so or not, they have to learn a lot about computers.

For avid readers of magazines like this, it is all pretty straight forward, this computer stuff. But what about the average draftsman or architect whose most sophisticated tool is his desk calculator?

To many potential Cad users, the computer scene is totaling foreign, and a lot of homework is necessary to understand what the salesman is talking about. A sad and sorry fact is that a lot of salesmen don't really understand what the hell is going on either. If you take the time to define your needs and gain a bit of background on the products, you will be able to ask leading questions and subsequently get the right answers.

Don't be put off if the salesman doesn't know an answer off the top of his head. Computers on their own (even PCs) are increasingly sophisticated machines, add a few graphics cards, a network and a mouse or digitizer and it becomes pretty complicated, and we haven't even talked about penplotters yet, let alone Cad software.

Back to the office for a moment. With manual drafting techniques, some jobs are more tedious than others, so it is with Cad but in different ways. A few jobs will yield very little benefit in terms of productivity on a Cad system. For example, a toilet extension on Grandma's flat would only take a few minutes on the drawing board for an accomplished draftsman, probably about the same time it takes to start up your Cad system.

No real gains here, however the next job might be 30 motel units with all the units having basically the same or similar floor plan. You'll only have to draw it once, and repeat it to achieve a real boost in productivity. The point is this: on average, most jobs can be done quicker and easier on a Cad system, provided they are well thought out before you rush up to the computer and start punching buttons.

Many potential users who are not particularly competent with a drawing board, have a misplaced expectation that the Cad software is going to make a Michaelangelo out of them and make up for their lack of knowledge or skill. Unfortunately, it doesn't work that way. A good Cad system will only make a bad designer more efficient and productive, it will do nothing about the bad designs, unfortunately.

The one cliche that has been flogged to within a gasp is that enticing line 'easy to learn'. Regrettably, even with years of drafting or engineering experience under your belt the system is going to be difficult to come to terms with. No longer can you doodle with your pen until the idea somehow develops.

Instead, you grasp this hairless mouse in your hot and sweaty hand and make deliberate moves that translate to the execution of instructions on the graphics monitor and result in points and lines that will eventually describe your creation.

Inevitably, the bod who wrote the software expected everyone to do something one way when in fact most people on your side of town do it another. Why? Because there will always be more than one way to skin a cat. If it's close to the way you do it now, the Cad system will come to you easily, if it is not, then you are about to experience frustration and annoyance.

To do as much as can be demonstrated to you by a salesman won't take long at all. Come the time to make up proper detail drawings, add notes, extract bill's of materials, interface to your milling machine or transfer files to the simulation software, then it all looks a bit different – and even the best software learning curve takes on the proportions of a mountain goat track.

The investment in software, provided that it is the right software for your application, is not a significant cost when compared with the investment in training. Anticipate a considerable loss of productivity for the first few weeks or even months. It can't be avoided, it can only be reduced. Training courses can help, but there is no substitute for dogged persistence.

In all instances, the most critical aspect is in respect of your dealers' support. He preferably should have staff experienced in using a Cad system to do similar work to what you propose. He must be available to you when you have a problem. And, he must be sympathetic to your desire to incorporate the equipment into your operation and make it a profitable addition.

If you are contemplating Cad software or hardware and the peripheral equipment such as plotters and printers, it is desirable to get it all at one place. I recommend that maintenance of some sort be arranged with your supplier and, by all means, ask questions.

All disciplines of engineering can benefit from intelligent implementation of Cad. In most cases, some changes in emphasis are needed, but at the end of the day a job will be done quicker, with less mistakes and look a million bucks to your client whose product, home, or bridge is more likely to be built right – the first time!

AutoCad Release 9

As David Chatwin found, 4 kilograms of package, 10 disks with 95 files and documentation like 'War and Peace', all add up to one powerful package.

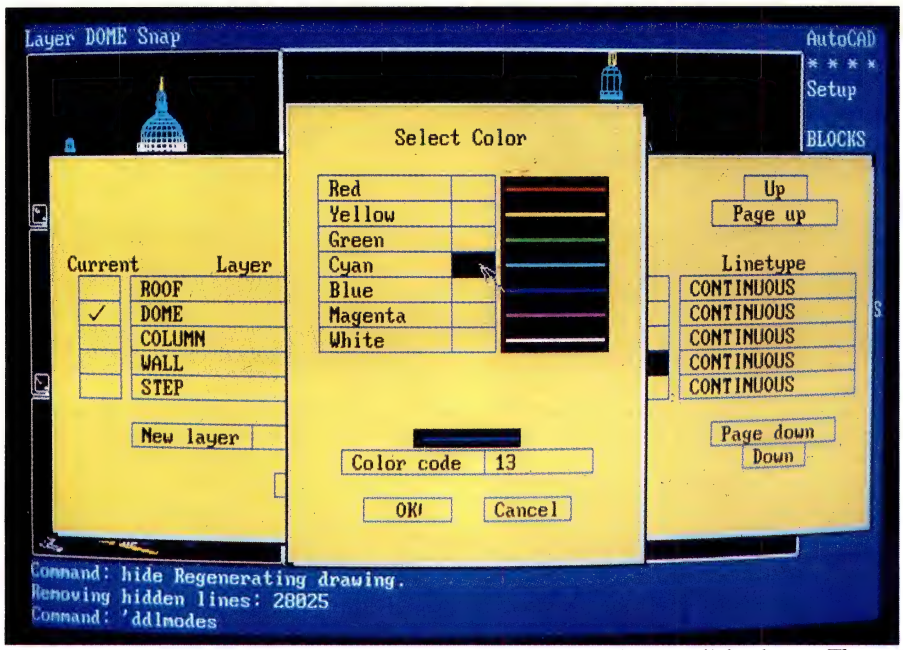


Figure 1. *An example of AutoCad's Advanced User Interface showing dialog boxes. The interface provides pull down menus, icon menus and dialog boxes.*

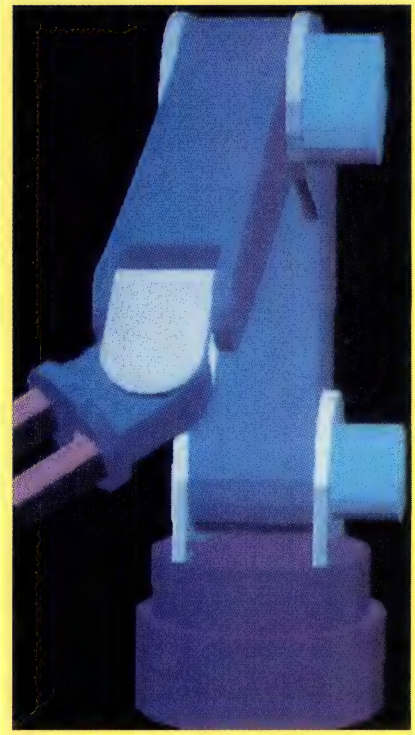
ENTRY INTO AutoCad is not to be taken lightly (it weighs nearly 4 kilograms, comes on 10 disks, has a documentation set which is longer than War and Peace, and comes complete with a dongle). Unlike its smaller cousin AutoSketch, AutoCad demands a lot from you and your computer. But then, AutoCad is regarded by the masses as the Grandaddy of Cad packages, and how many other software packages can claim to be up to Release 9 already?

In terms of hardware, you will need a hard disk, because the AutoCad files (all 95 of them) occupy around two megabytes of disk space (before you even start your first drawing). You will also need a numeric co-processor and a display capable of graphics, although AutoCad is not that fussy and supports 44 different types of display adapter, including the VGA.

If you have expansion memory present, AutoCad will use what is available, unless told otherwise. Expanded memory will speed the program up, as it is used to augment the I/O paging space. Next on the list is a serial port for the dongle (more on this later), and, of course, a printer or plotter. I would suggest that a plotter is a much better proposition than a printer, as the quality of output from a printer is, quite frankly, terrible.

Dongle

For those of you who don't know what a dongle is, it is a sneaky little device that plugs into the serial port on your



AutoShade

As an adjunct to releases of AutoCad 2.6 and later, AutoDesk offer AutoShade as a postprocessor for rendering three-dimensional wireframe drawings into shaded images.

AutoShade uses 'faceted shading' which generates renderings in 16 shades of grey or 256 colours – if the computer is equipped with a graphics adapter that generates a larger palette, that capability can be used.

The preliminary setup is made from within AutoCad, where the user specifies the number of 'lights' and 'cameras' to be used for the in an AutoShade 'snapshot' of the drawing.

computer and stops you using the software it is designed for on more than one machine at once. The manufacturers of these appendages prefer to call them hardware locks, I prefer to call them a nuisance. The first problem is what happens if you lose your dongle? The answer is simple – you go out and buy another complete copy of AutoCad.

The task of coming to grips with AutoCad is certainly helped by the excellent documentation.

To me this is totally unacceptable, as why should you be forced to pay out over $5,000 to replace a $20 dongle? Secondly, there is the risk that something you have plugged into your serial port may not work with a dongle in place. AutoCad has a simple answer for this too – plug the other device into another port, but it is just bad luck if the other device expects to use COM1 as that is reserved for the dongle. This also means that you may need to buy a multi-function card to get that extra serial port.

A serious oversight is the lack of a 9-pin adapter for those of us lucky enough to own an AT or compatible. If you have an AT, remember to buy (or make) a 25 to 9 pin adapter before you think about using AutoCad. You may also experience a similar problem if the serial port on your computer is of the wrong gender. Finally, if you have your computer on a whiz-bang computer table you may not have enough room behind the computer to plug in the dongle, which is quite long. During this review, I had my system unit precariously balanced on the edge of a shelf on my desk, which would not be a satisfactory long term arrangement.

On a personal level, AutoCad will demand a lot of learning, and previous experience with Cad would be a definite advantage. The task of coming to grips with AutoCad is certainly helped by the excellent documentation. The five books in the documentation set are: *How to get started in AutoCad without reading the manual* (which I think should qualify as false advertising), *AutoCad installation and performance guide*, *AutoLISP programmer's reference*, *AutoCad reference manual*, and *AutoCad reference manual supplement*.

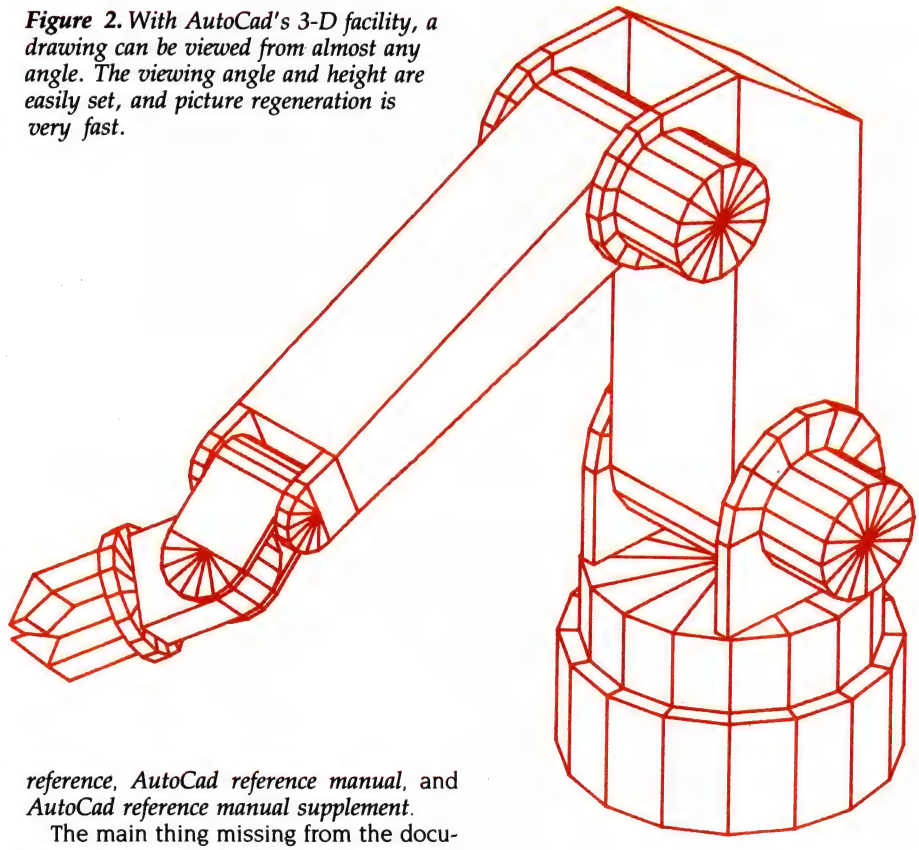


Figure 2. *With AutoCad's 3-D facility, a drawing can be viewed from almost any angle. The viewing angle and height are easily set, and picture regeneration is very fast.*

The main thing missing from the documentation is a good tutorial (or any tutorial for that matter). The *How to get started* book is really a waste of time as it just takes you through some steps to create a drawing, without explaining what you are doing.

On the positive side, the reference manual is excellent, with a good index and list of contents that make it easy to find the particular instruction you want. Parts of the manual need to be read three or four times before it all makes sense, but perseverance will be well rewarded.

Extensions

AutoCad Release 9 now has optional extensions to the base package which are called 'Advanced Drafting Extensions'. The three levels are called ADE-1, ADE-2 and ADE-3, and the manual at least does quite clearly indicate which instructions are in the base package, and which are in each of the extensions.

The important aspects of each extension are: ADE-1 is used for dimensioning, fillets and chamfers, axes and ruler lines available on screen, ability to specify the format of co-ordinates, distances and lengths (imperial and metric), cross hatching or pattern filling of objects, freehand sketching and a status line.

ADE-2 gives various grid and snap options (including isometric), dragging of objects, mirroring of objects, slide 'snapshot' of the display, and attributes definition for objects.

ADE-3 provides three-dimensional (3-D) drawing, AutoLISP (see below), polylines (which are very fancy lines consisting of lines and arcs, which can be drawn and edited in a surprising number of ways), offset curves and parallel lines, rotation, scaling, stretching and other playing around with objects, freezing of layers, markers along lines, arcs, ability to add external commands to AutoCad and a facility to exchange drawing files with other programs using the IGES file format.

These extensions certainly allow the user to build up a very powerful Cad system, but I really do think that those in ADE-1 should be included as standard, as they are what I would call basic Cad functions – who would buy a Cad package that didn't offer dimensioning? (The copy I had for review included all three extensions).

AutoLISP, in ADE-3, is an implementation of the LISP programming language embedded within AutoCad. It allows the user (if they are clever enough) to create variables and expressions to use instead

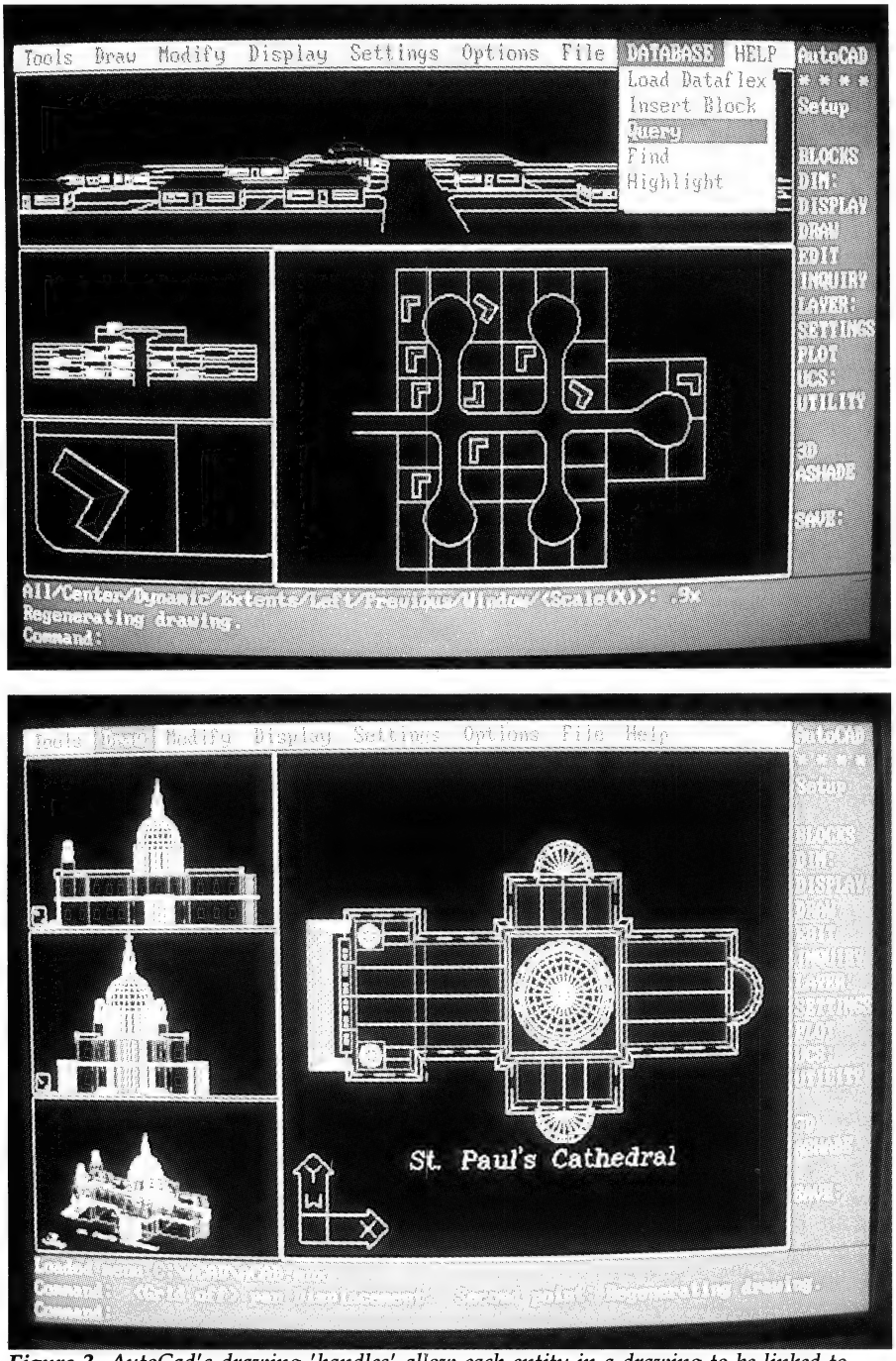


Figure 3. *AutoCad's drawing 'handles' allow each entity in a drawing to be linked to external data such as a database record (top); DVIEW is a viewing tool that allows perspective viewing, amongst other features (bottom).*

of normal input to AutoCad commands, and you can save these programs for later use. AutoLISP will also let you write macros and functions for AutoCad. Unfortunately, I did not get a real chance to give the AutoLISP feature a good tryout, but what I saw really impressed me.

Operation

AutoCad certainly runs very quickly, and its speed of operation is more than acceptable on even a poor old XT. In fact, I was somewhat surprised at how fast it did run on my Turbo XT compatible. This speed in operation is obviously due in no small part to the presence of the obligatory math co-processor.

One shortcoming that becomes apparent early on is the lack of a file lookup facility when you want to load or save a file. This is really frustrating when you have forgotten the name of the drawing you want to load. There is a FILES command which allows you to list, delete, rename and copy files, but won't let you find a file name while you are trying to retrieve or save a file.

An area of some concern to myself was what appeared to be an instability when using a Microsoft mouse. This problem was particularly annoying as AutoCad seemed to think that a mouse button had been pressed when none had. Of course, Murphy's law states that the problem will only occur at the most inconvenient moment.

In fact, the copy of AutoCad I reviewed seemed a bit 'buggy' all round, especially in the user interface, which quite often had a mind of its own. It quickly became frustrating to have a command repeated several times, without any action on my part. In other areas, the program did not seem as 'polished' or developed as a package with AutoCad's history (or price tag) should be.

While I am on the subject of the user interface, the system AutoCad uses seems to have grown like Topsy. Some parts can use the mouse or cursor keys, some parts want a number entered, and other parts expect a letter or word as a response. To really confuse you, most commands (but not all) can be terminated with either the return key, or the space bar. To say it is confusing would be generous; I found it quickly became an annoyance.

The menu system in AutoCad is very advanced, and in addition to the normal menus, you can customize your own for a particular drawing. This would certainly be attractive to users who have a standard type of drawing, with certain standard operations they would want their users to do. If anything, AutoCad may have too many menus, with a series of menus on the right of the screen, and seven or so pull-down menus along the top of the screen.

Along with this menu structure is the ability to redefine a command to implement another function which it did not originally perform.

Another welcome feature is the ability to construct menus that feature graphic choices (icons) instead of words. This is really useful for defining things like hatch patterns, which can be displayed on the screen as the pattern instead of a cryptic description like ISO 6631.

I soon came to realise that just when I thought I had discovered all AutoCad had to offer, it would surprise me with another command. These 'surprise' commands included such delights as ones to divide a line into segments, either by length, or by entity.

Another feature I liked was the addition to the normal FIT command – normally FIT will force a curve through a series of points, but AutoCad now offers a spline curve which gives a 'curve of best fit', which may not necessarily pass through every point given.

The zooming facilities are very good, with the ability to zoom in six different ways, and the option of returning to the previous view. Unlike some other Cad packages, the speed of drawing regeneration encourages the user to use these zoom options to the full extent.

Another welcome feature is the ability to construct menus that feature graphic choices (icons) instead of words.

Dimensioning is another strong point, with facilities provided to use tick marks (or your own symbol) instead of arrows, add text of your choice, specify tolerances to be shown, and to dimension in two different units (for example, inches and millimetres). I certainly could find no deficiency in the dimensioning side of the package, with this side of things being as versatile as manual dimensioning on conventional drawings.

Text entry in AutoCad is among the best I have come across, with over twenty text fonts available, and six different attributes that can be set. When you have set the desired style for your text you can then give it a name and save it for instant recall later on.

The 3-D drawing capability of AutoCad is good, with an excellent facility for viewing the drawing from almost any angle or elevation. The viewing angle and height are easily set, and picture regeneration is very fast.

In contrast to AutoCad's speed of operation in normal use, removing hidden lines in 3-D can take ages to complete. On a moderate size drawing, it really is a cut lunch job to remove the hidden lines. With this speed (or lack of it) factor in mind, it is generally easier to put up with the confusion of leaving the hidden lines in place.

A plotter is really an essential requirement as the output from a printer is terrible. Unlike ProDesign II, AutoCad does not offer a high resolution printing mode, which for a package like this is quite an oversight.

Plotting, on the other hand, is excellent with the ability to change all sorts of options, such as whether to write to a file, adjusting the plot size and origin, altering pen size and scaling the plot to fit the paper size. You can also change pen speed and line types at the time of plotting, which is a very handy feature if you often plot on different types of media using different pens.

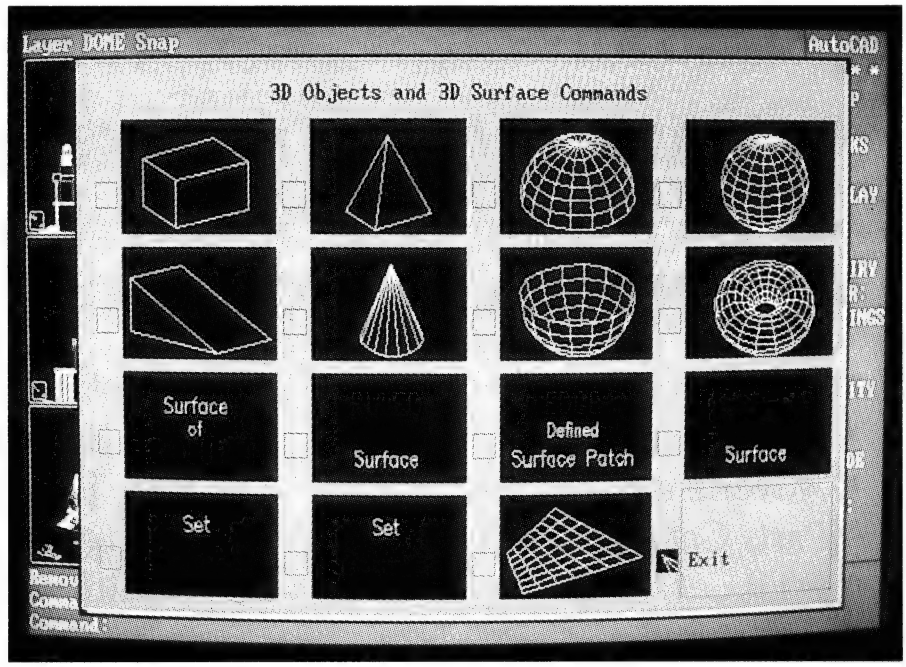


Figure 4. *An example of AutoCad's Advanced User Interface showing an Icon menu.*

Overall, I found AutoCad to be everything I expected, and then some, and I must say, not as expensive as I thought it might be. Of course, AutoCad is the Grandaddy of Cad packages, and has been around as long as I can remember, so you would expect it to be good.

This long heritage shows, as the package is extremely powerful, with more features than I could hope to reveal here. But, like a lot of packages that have grown over a long time for a technical market, AutoCad suffers in the implementation. The user interface is frustrating in the least, and seems to suffer from some bugs.

The user will just have to put up with the interface just to get to the power inherent in the package. I think that ordinary users will, however, quickly tire of fighting the interface, become frustrated by the lack of a tutorial, and take some time to become comfortable with the package. This is a disappointment, as the rough side of the package detracts from its overall usefulness.

The AutoLISP option would have to be a feature (if you needed it), that would make AutoCad worth buying, regardless of the cost. The things possible with AutoLISP still leave me somewhat speechless, but like the overall package, you would have to think carefully about the cost.

To those who are currently using AutoCad, the upgrade to Release 9 will be worthwhile. For those who are thinking of buying a Cad package for the first time, or are contemplating upgrading from a cheap (or cheaper) package, I would suggest that you look carefully before you leap. AutoCad is not cheap, and will require a large investment in terms of money, equipment and time. There are other packages on the market which are cheaper, and while they do not offer the power or versatility of AutoCad, they may meet your needs. If you want (or need) what might well be the most powerful Cad package available today for a PC, then your choice would have to be AutoCad. □

Product Details

Product: AutoCad Release 9
Distributor: AutoDesk Australia, PO Box 58, Richmond 3121 Vic. (03) 429 9888
Price: $5328 taxed

SKYSCAN

Half-Page Hand Held Scanner

Uses Latest "Contact Image Sensor" Technology

REAL LIFE APPLICATION

- Banking
- Real Estate
- Advertising
- Parts Catalogue
- DTP
- Education
- etc.

SOFTWARE SUPPORTED

- dBASE III +, Fox Base, Clipper
- C, Basic, Pascal, Assembler
- OCR Read Right
- Ventura, PageMaker
- Paint Brush, Dr. Halo
- Many More

CALL US FOR OUR SPECIAL PROMOTION PRICE FOR SKYSCAN

ALSO AVAILABLE:-

LASER PRINTER **$3000.00 (inc. tax)**

Ricoh Engine, 6ppm, 1Mb RAM, 25 Font Packs, HP Laser Jet + & Epson FX Emulation

"INFORMATE" AT compatible computer

20Mb HDD, 1.2Mb FDD, Multi I/O Card, HGA Card, 101 Keyboard, 200W Power

- 12MHz 640Kb RAM .....$2200.00 (inc. tax)
- 16MHz 1Mb RAM .....$2400.00 (inc. tax)
- 20MHz 1Mb RAM .....$2500.00 (inc. tax)

EGA Card Extra $200.00 (inc. tax)

CC DATA COMPUTERS

Ph: (02) 281 5122 : (02) 749 1066

PC Security – Part 2

If you've put a lot of effort in to graphic creations, the last thing you want is someone 'hacking' your work!

THE SUBJECT of the ubiquitous 'hacker' springs to mind immediately when software security is under discussion. I've been around the edge of the industry for many years now, and have yet to hear first hand of a successful intrusion to anyone's data files from an outside source. Software thefts have occurred and files have been corrupted, but the vast majority of such events take place from inside the organisation. Many such incidents are the result of accidents at the keyboard, covered up or not reported by the perpetrator and seen as external, deliberate attempts to sabotage data.

It doesn't matter what the cause, many such events are preventable by some very basic software precautions. Hardware protection against accidental losses were discussed in the earlier article but I omitted to mention the most basic forethought, that of applying a write protect tab to sensitive floppy disks. Ever wondered what those little black or silver stickers were you got with each box of disks? Used as a matter of habit, these alone will prevent many avoidable data losses. I'd rather be told a hundred times 'Disk Write Protected' than overwrite a file I didn't mean to.

Like a padlock, password protection in it's basic form will only keep an honest person out. A password simply says 'I question your right to access or change this data'. Most entry level passwords are like a car burglar alarm and, at best, will only buy you time.

The simplest password protection comes from an autoexec.bat file and could look like this –

```
echo PLEASE TYPE IN YOUR PASSWORD
echo FOLLOWED BY [enter] ^Z [enter] (enter, control z, enter)
copy con PASSWORD.TXT > nul:
echo pass2 > passn.txt
copy pass.txt + password.txt + passn.txt password.bat > nul:
password
```

To run this, a file called PASS.TXT must be created. To do this simply type –

```
COPY CON PASS.TXT [enter],
set password=^Z [enter]
```

Plus a further file created the same way, type –

```
COPY CON PASS2.BAT
echo off
if %password%. == fred. goto fred
REM change fred in both cases to your choice of password
REM include full stop after % and your password
if %password%. == mary. goto mary
echo ACCESS DENIED - WRONG PASSWORD
goto end
:fred
REM THE LINE SHOULD READ :YOUR CHOICE OF PASSWORD
dir/w
REM OR ANY VALID DOS COMMAND
goto end
:mary
REM YOUR SECOND PASSWORD CHOICE
dir/w
:end
park
```

This is a simple batch file that allows up to two valid passwords and could be extended to as many as you require. Any operator familiar with DOS operation will readily see that by booting to a floppy disk, this is bypassed. Use of Ctrl-C to terminate the batch job will also circumnavigate it, but it will slow down many unauthorised users.

Your choice of passwords is crucial. The one which springs most readily to your mind will also spring to most other minds. Too many people use either their own names or initials; spouses names or children's names are also favourites. The old bank trick of your Mother's maiden name is harder to crack, but still in regular use. Phone numbers are another favourite and amongst the first to be checked by hackers. The password should be changed at irregular intervals and a different one used on each system.

There is a product available called Microcomp RAMS V5.01 (see review, Sept 88, *YC*), in the form of a hardware card which intercepts the call from boot up to the disk drives and requests a password. The password is changeable and linked to levels of security. This means that certain staff can have access to certain areas of the hard disk via security menus. Levels of password protection can be many layers deep but in common with any such system, any person with reasonable knowledge can still simply remove the card and boot to a floppy disk before accessing your data.

Protection of data available from a computer which is left connected to a phone line for legitimate users is more critical. In this situation, the outsider has all night to try out passwords and methods of obtaining entry. The first requirement is that the phone number should be available only to authorised users and, if possible, changed occasionally. Most commercially available communication packages have elaborate password systems but without the aforementioned precautions on password selection are next to useless. The better 'online' systems I have used demand a user number followed by a password. If the user number is correct and then the password incorrect, the system allows only three tries before locking that user number out completely and only verifiable requests to the system operator by letter or phone will re-establish that user.

The next stage goes a lot further and involves writing your data in such a manner that it is unreadable to an unauthorised user. This is termed Data Encryption. Any encryption is eventually breakable and one of the earliest uses of a computer was to break the code of the German mechanical coding machine, Enigma. The standards demanded by the US military calls for a standard of encryption capable of withstanding analysis by a supercomputer for up to XXX hours, and is constantly being updated. Such programs are resident in your computer and intercept any data write to disk. The data so written is absolute garbage when viewed without the companion de-encryption file. Data stored in this method is still available at the keyboard of the host computer but when copied or removed is unusable.

A recent program from New Zealand deals with the problem of authorised users in a different manner. The program is called Digital Signature and address the

HELP FOR ALL PROGRAMMERS

*You can now create sophisticated applications **FAST** with our compilers, database and windowing libraries, editors and tools.*

*Convert your dBASE programs to C with **dBx** and watch them run like lightning under MS-DOS, Unix, VMS etc. Use **c-tree** and **r-tree**, the **BEST** multiuser database and multi-file report generator. Faster than C-ISAM and Btrieve. With full C source.*

***DON'T** re-invent the wheel. You need **Blaise** general, comms and graphics libraries with full C source.*

***FULL RANGE** of products including Microsoft C, QuickC, Turbo C, DeSmet, Hitech, Turbo Pascal, MicroFocus COBOL, Microport Unix, Wendin DOS/XTC/OST, PC-Lint, c-terp, and more.*

*Mail this coupon to receive your **FREE** Programmer's Catalogue Disk MS-DOS 5.25"*

Name.....

.....

Address.....

.....

.....*p/c*.....

MICROMART PTY. LTD.
GPO Box 1579, Sydney 2001
Phone: (02) 214 2853 24 hours
Fax: (02) 550 9932

problem of two users both requiring verification of each other. The first should know that the data or message is being sent to the right person and the receiver should know that the message is genuine. The first step is the generation of a three part number group, two large numbers and their product. The product is common knowledge to both parties but each retains his multiplier.

Sounds simple and at the lower end of the number series it is. Given the two numbers, say 345 and 789 it's easy to arrive at their product, 272,205. Without knowledge of the first two numbers, it is impossible to calculate what they are, but legitimate users, holding one of the numbers can easily verify that the other party is an authorised user. With a small number, answer could be worked out by factorization, but Sifr, as the program is called, will generate numbers up to 200 digits long, and factoring numbers of such magnitude is beyond current computer technology.

Having generated this large number, the program encrypts your data with a formula based on the number and deciphering takes place at the other end by the application of the second number. The system has been used between two parties who really didn't trust each other.

Recently the USSR and USA agreed to share data from nuclear tests but were loath to allow physical observation of such tests. They allowed the placement of so called 'Black Box' data recorders near the test sight and to verify that the boxes had not been tampered with, applied such digital signatures. This article is not a review of Sifr, but it is without doubt the cleanest and safest encryption program I have seen. It is available from First Large Integer Computing, PO Box 6955, Wellesley Street, Auckland, New Zealand for NZ$99.00.

Write protection

I mentioned earlier the physical write protection available on floppy disks. Such protection is available for specific files on your hard disk. By use of the DOS function, Attribute, you are able to effectively tell your computer that certain files are available for reading only and any attempt to write data to these files will be rejected with a terse message from the operating system. Again, this precaution is only going to keep out the honest person and perhaps prevent accidental use of your data files.

To change a file to a Read Only state, you simply type from the DOS prompt: ATTRIB +R drive: PATHNAME. Addition of a /S after the command would change all like named files through the sub-directory. A batch file could easily be written to automatically change all your valuable files at the end of a day's work and another to make them accessible when required.

There is another attribute not normally available from DOS which can be accessed through some file managers such as Norton Utilities. FA.EXE (File Attributes) from the Norton suite allows you to completely hide a file from a normal DOS directory search. The file still exists and can be operated on in the normal manner but is totally invisible to the casual user.

Unfortunately, the companion DOS manager, Norton Commander, clearly displays all directory entries, including the normally hidden ones. An entire directory may be hidden with a single command and a casual or illegal user would be confronted with an empty directory. A word of warning here, some programs will not run if hidden and some will run but be unable to find their associated data files. The only way to be sure is to back up the programs you need to secure to another directory and try it out after hiding the files. If there is any doubt, just form a habit of hiding them at the end of a day and replacing them when you need them.

Compressing

Another method of making it more difficult for unauthorised users, or simply buying time, is to compress your data files with any one of the many data compression programs available.

Rename your chosen data compression program with some innocuous name, write a batch file to carry out the compression and expansion with some other non-descriptive name and run both from another, unassociated directory. Compress your files each night and expand them prior to use.

Reviewing all of the above, it's easy to come to the conclusion that there is no certain way of securing data in the computer. Basically, that's right, but if a selection of protective measures are taken you will certainly go a long way towards both shielding your valuable data from accidental over-write and stopping unauthorised users.

The only totally safe method is still physical removal of the media. By that I mean backing up your data to some form of storage such as floppies, a removable hard disk such as the Mountain Drive Card or some form of tape drive storage unit and removing it from the premises when not in use. □

SANCOM COMPUTERS

MICROCOMPUTERS, PERIPHERALS AND COMPUTER ENHANCEMENT PRODUCTS
IBM HARDWARE & SOFTWARE COMPATIBLE 12 months SANCOM WARRANTY on all Computers

STRENGTH - *5 Showrooms / Sales Offices conveniently located at*
BLACKTOWN, CROWS NEST, HURSTVILLE, LIVERPOOL & PYRMONT
All backed by an efficient SERVICE CENTRE & oversea assembly plant

VALUE & QUALITY - *Large Purchasing Power for wider range, realistic pricing & assured quality*

SANCOM XT TURBO

8088 4.77/10 MHz V20 CPU
640K RAM 360K Floppy — 150W Power Supplyy — Color or Monochrome Graphic Adapter
84 Keys Low Profile Keyboard — Printer, Serial and Game Ports — Battery backed Real Time Clock

SYSTEM with 20M H/D $1630 33M H/D $1685 40M H/D $1780 66M H/D $1860

SANCOM AT 10 MHz

80286 6/10 MHz
640K RAM 1.2M Floppy — 180W Power Supply — Color or Monochrome Graphic Adapter
84 Keys Low Profile Keyboord — Printer, Serial Ports — Battery backed Real Time Clock

SYSTEM with 20M H/D $2290 33mM H/D $2400 40M H/D $2440 66M H/D $2570

SANCOM PORTABLE AT

80286 6/10 MHz
Blue Super Twisted Back-lit LCD — IBM CGA compatible — Accepts External TTL or Color Monitor
Standard AT motherboard — Accepts standard Plug in Boards — Dimension : 20x24x40 cm

SYSTEM with 20M H/D $3250 33M H/D $3360 40M H/D $3400 66M H/D $3540

SANCOM BT 386 : 20MHz 80386 1M RAM 1.2M Floppy Printer & Serial Ports **from $5550**

SPECIAL SANCOM AT PREMIER 10MHz 0 wait state 42M Voice Coil Hard Disk $2850
640K RAM, 1.2M Floppy Drive, Parallel and 2 Serial Ports, Battery backed Real Time Clock, 101 keys Keyboard

DESK TOP PUBLISHING:

LASER PRINTER - Ricoh Engine 6ppm 1M RAM HP Laserjet Plus & Epson emulation Font packs **$3500**

IMAGE SCANNER **$495**
Hand held 105 mm (4.25") Scan width 200DPI resolution Free Desktop Publishing Software
Scanned image compatible with most other Desktop Publishing software

NETWORK:

NOVELL NETWARE - Industrial standard network software 4 users $990 100 users $3390
ETHERNET - Super fast 10M bps network interface card Single co-axial cable distribution $ 590
DISKLESS WORKSTATION - Available soon Cabling, Hardware & Software installation $QUOTE

QUALITY SPECIALS :

Hard Disk Miniscribe with Controller for PC/XT 20M $590 33M $645 40M $740 **NEW BIG 66M $ 820**
EGA (256k RAM) with 14" Dual Sync Color EGA/CGA Monitor $ 990
80286 Speed Card Upgrade your PC/XT to AT performance 7 times PC speed $ 350
Mouse Serial 3 buttons Mouse System Mouse compatible $ 90 Mouse System & Microsoft Mouse Compatible $ 110
Color Monitors High Resolution 14" .38 Phos CGA $525 Dual scan CGA/EGA 14" .31 phos. $ 790
Multiscan Color Monitor 14" Digital & Analog CGA, MGA, EGA, SEGA, VGA & IBM PS2 compatible $ 950
Word Processing Monitor white page 15" non-glare $ 275
Printer IBM / Epson compatible 80 column 11" $395 136 column 15" $ 695 LQ/24 pins $ 750
Diskettes professional quality 360K DS/DD box of 10 $12 10 boxes $ 110 1.2M HD box of 10 $ 35

SHOWROOMS & SALES OFFICES

Suite 3	34 Campbell Street	**BLACKTOWN**	(Mon-Fri 9:00am to 5pm Sat 9:30am to 3pm)	Tel: **831 1011**
Ground fl.	102 Willoughby Road	**CROWS NEST**	(Tue-Fri 9:00am to 5pm Sat 9:30am to 3pm)	Tel: **437 5113**
Suite 1	10 Woodville Street	**HURSTVILLE**	(Mon-Fri 9:30am to 5pm Sat 9:30am to 3pm)	Tel: **579 3377**
The Mall	313 Macquarie Street	**LIVERPOOL**	(Mon-Fri 9:30am to 5pm Sat 9:30am to 4pm)	Tel: **602 9088**
Shop 146	313 Harris Street	**PYRMONT**	(Tue-Fri 9:30am to 5pm Sat 9:30am to 3pm)	Tel: **552 1640**

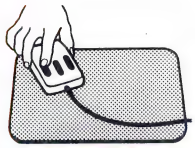
SERVICE CENTRE & HEAD OFFICE

Trade & dealer enquiries welcome

1 Athol Street Leichhardt N.S.W. 2040 Tel: SALES 568 2500 SERVICE 568 2660 Fax: 569 0526

All Prices include SALES TAX Prices & Specification subject to change without notice

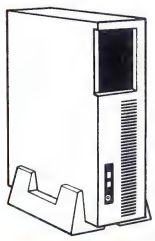
ROD IRVING ELECTRONICS



MOUSE MAT

- A quality mouse mat for accurate and comfortable tracking
- Anti-static
- 265 x 225mm

C21075 ..... **$14.95**



VERTICAL COMPUTER STAND

FREE VALUABLE DESK SPACE OF YOUR PC BY PLACING IT ON ITS SIDE ON THE GROUND!

- Adjustable width from 115-188mm (4¼"-7¼")
- Accomodates IBM*PC/XT/AT and most compatibles
- Light weight, durable construction

C21076 ..... **$24.95**

ROD IRVING ELECTRONICS

SYDNEY: 74 Parramatta Rd.
Stanmore. 2048.
Phone (02) 519 3134
Fax (02) 516 3671

MELBOURNE: 48 A'Beckett St.
Phone (03) 663 6151

NORTHCOTE: 425 High St.
Phone (03) 489 8866

CLAYTON: 56 Renver Rd.
Phone (03) 543 7877

MAIL ORDER & CORRESPONDENCE:
P.O. Box 620, CLAYTON 3168
Order Hotline: 008 33 5757
(Toll free, strictly orders only)
Inquiries: (03) 543 7877
Telex: AA 151938
Fax: (03) 543 2648

ORDER HOTLINE
008 335757
(TOLL FREE)
STRICTLY ORDERS ONLY

LOCAL ORDERS & INQUIRIES
(03) 543 7877

POSTAGE RATES:

$1 – $9.99	$2.00
$10 – $24.99	$3.00
$25 – $49.99	$4.00
$50 – $99.99	$5.00
$100 plus	$7.50

The above postage rates are for basic postage only. Road Freight, bulky and fragile items will be charged at different rates.

All sales tax exempt orders and wholesale inquiries to:
RITRONICS WHOLESALE,
56 Renver Road, Clayton.
Phone: (03) 543 2166 (3 lines)
Fax: (03) 543 2648

Errors and omissions excepted. Prices and specifications subject to change.

IBM*, PC*, XT*, AT*, are registered trademarks of International Business Machines. *Apple is a registered trademark. *Denotes registered tradmarks of their respective owners.

PRINTER RIBBONS TO SUIT:

CP80, SX80, DP80, BX100 MB100
1-9 (C22036) 10+
$8.95 **$7.95**

MX70/80 FX70/80 RX70/80
1-9 (C22031) 10+
$8.95 **$7.95**

MX100, FX100, RX100
1-9 (C22002) 10+
$19.95 **$18.95**

LX80
1-9 (C22003) 10+
$9.95 **$8.95**

LQ1000
1-9 (C22012) 10+
$27.60 **$25.00**

STAR NX1000 PRINTER

- 144 c.p.s. high speed draft printing
- 36 c.p.s. NLQ printing
- 8 built-in NLQ fonts
- Proportional printing available in all font styles
- Convenient push button control panel
- Paper parking mechanism
- Tractor and friction feeds standard
- Standard parallel interface
- Two emulation modes: IBM Proprinter II, EPSON ESC/P

C22049 ..... **$495**

DELUXE PRINTER STAND

- Restores order to your work area without occupying extra space.
- Feeds and refolds paper under the printer automatically.
- Adjustable paper deflectors to ensure smooth flow of paper.
- Made of moulded plastic
- Suitable for most printers

C21058 80 column **$89.95**

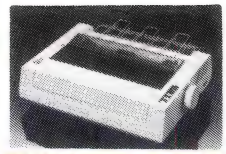
THE BUTTON SPIKE PROTECTOR

Surges and spikes are caused not only by lightning strikes and load switching but also by other equipment being switched on and off, such as fluorescent lights, electric motors, fridge freezers, air conditioners, etc.

For effective protection such spikes must be stopped before they reach your equipment. Simply plug The Button into an outlet and it will protect all equipment plugged into adjacent outlets on the same branch circuit. The Button employs unique metal oxide varister technology and will dissipate 150 joules of electrical energy. (nearly twice that of comparable surge arresters.)

SPECIFICATIONS:
Voltage: 240V Nominal
Total Energy Rating: 150 joules
Response Time: 10ns
Protection Level: 350V peak

..... **$34.95**



PANASONIC KX-P1081 DOT MATRIX PRINTER

- 120 C.P.S.
- Pica or Elite character set
- Print Modes: NLQ, Dot Graphics, Draft, Proportional Font.
- Reliable and Compact
- Proportional Printing
- Logic Seeking
- 1K Printer Buffer

C20035 . Normally $595
We won't be beaten! **only $379**

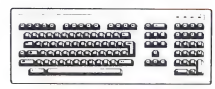
PRINTER LEAD

- Suits IBM* PC/XT, compatibles
- 25 pin "D" plug (computer end) to Centronics 36 pin plug

P19029 (1.8 metres) **$14.95**
P19030 (3 metres) ... **$19.95**

PRICE BREAKTHROUGH!

VGA MONITORS $995



IBM* XT* & AT* COMPATIBLE EXTENDED KEYBOARD (101 KEYS)

These new keyboards are both XT* and AT* compatible!

- 20 Dedicated function keys
- Enlarged "Return" and "Shift" key
- Positive feel keys
- Low Profile Design, DIN standard
- Separate Numeric and Cursor control keypads
- Additional Functions... Key-in-lock, Audio Beep, Previous Word, Next Work, Fast Repeat, Line Feed, Pause, Clear Screen, Reset.

X12022 ..... **ONLY $109**

IBM* XT* COMPATIBLE KEYBOARD

- 100% IBM* PC*, XT* compatible
- Low profile keyboard design
- Proper placement of shift keys with large key tops to suit professional typists.
- 3 step height/angle adjustment
- Cherry brand TS-M00001 19mm low profile switches, meet 30mm ergonomic requirement and provides high performance and maximum reliability.
- Curl lead plugs straight into PC
- 3 Status displays

Just like the "Real McCoy" only at a fraction of the price!

Cat.X12020 .... **only $89**

RITRON 2 MONITORS

Stylish 20MHz monitors available in green or amber displays and with built-in swivel and tilt base.

SPECIFICATIONS:
CRT Display Size: 12 inches non-glare 90 degree deflection.
Input Signal: 1.0 - 2.5V p-p composite video signal.
Input Impedance: Normal 75 ohm, high approximately 50K ohm.
Input Terminals: RCA phone jack.
Rise and Fall Time: Less than 25 us
Video Bandwidth: 20MHz
Corner; 800 lines
Geometric distortion; 2% or less
Linearity; less than 2%
Controls:
Front; Power On/Off, brightness, contrast. **Rear;** Vertical hold, Horizontal hold, Vertical line, Vertical size.

Green Cat.X14506 ..... $179
Amber Cat.X14508 ..... $179
ONLY $149

ZDIN 12" 20MHz COMPOSITE MONITOR

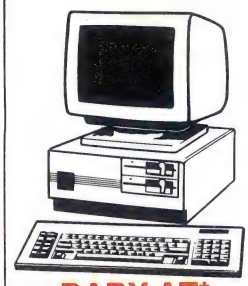
FEATURES....

- High contrast, non-glare screen
- High resolution, 80 or 40 character display

SPECIFICATIONS....
Picture tube: 12" diagonal and 90° deflection
Phosphor: Available in Green or Amber
Video input signal: Composite Signal
Polarity: Negative Sync.
Level: 0·5V-2·0Vp-p
Scanning frequency:
Horizontal: 15.734 KHz +−0·1%
Vertical: 60Hz
Video bandwidth: 20MHz
Active display area: 216(H) x 160(V)mm.
Display character: 80 characters x 25 rows.
Input terminal: RCA Phono Jack
Controls:
Outside: Power Switch, Contrast, Brightness, H-Shift, V-Size.
Inside: H-Width, H/V hold, H/V linearity, Focus.
Power supply: 110/120V 60Hz, 220/240V 50Hz
Dimensions: 308(W) x 307(H) x 297(L)mm
Weight: 7·3 Kg
Shipping weight: 8·3 Kg

CAT.No.	DESCRIPTION	PRICE
X14514	(GREEN) .	$129
X14516	(AMBER) .	$129

SPECIAL, ONLY $119
(10 OR MORE $109 EACH!)

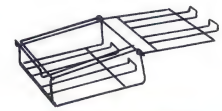


BABY AT* COMPATIBLE COMPUTER! FROM $1,895

- Final assembling and testing in Australia!
- 1 M/Byte Main Board
- Switchable 8/10/12 MHz
- 1.2 M/Byte Floppy Disk Drive
- 80286 CPU
- Colour Graphics Display Card
- 8 Slots
- Floppy & Hard Disk Controller
- Printer Card and RS232
- Keyboard
- 200W Power Supply
- Manual
- 6 Months Warranty
- Size: 360(W) x 175(H) x 405(D)mm

SHORT BABY AT*
512K RAM **$1,895**

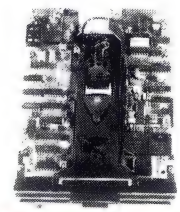
STANDARD BABY AT*
640K RAM, hard disk drive....
& 20 M/BYTE HARD DISK $2,195
& 40 M/BYTE HARD DISK $2,395
& 80 M/BYTE HARD DISK $3,795



PRINTER STANDS

- Restores order to your work area.
- Conveniently stacks paper printout in document tray automatically
- Made of black plastic coated steel
- Suitable for most printers (80/132 column)
- Excellent value at these prices!

C21054 ..... **$26.95**



MITSUBISHI 5¼" DRIVE 4851/MF501

Slimline 5¼" disk drive, double sided, double density. 500K unformatted, 360K formatted. 40 track/side. Steel band drive system.

Cat. C11901 ..... **$239**

MITSUBISHI 5¼" DRIVE 4854/MF504

Slimline 5¼" disk drive, double sided, high density, 1·6MB unformatted, 1·2MB formatted.

Cat. C11904 ..... **$279**

MITSUBISHI 3½" DRIVE MF353C

Double sided, double density, 1MB unformatted, 720K formatted.

C11908 ..... **$239**
C11909 Incl 5¼" mount bracket **$269**

MITSUBISHI 3½" DRIVE MF355

1·6 M unformatted, 1·44M formatted.

C11910 ..... **$269**
C11911 Incl. 5¼" mount bracket **$299**

5¼" MOUNTING BRACKET KIT FOR 3½" DRIVE

X11050 ..... **$29**

20 M/BYTE HARD DISK

Tandon drive with controller card. IBM* compatible. 12 month warranty

X20010 ..... **ONLY $495**

42 M/BYTE HARD DISK

MiniScribe drive, IBM* compatible. 50 M/Byte unformatted. 12 month warranty.

Without controller .. **$595**
With controller **$695**

80 M/BYTE HARD DISK

Seagate drive, IBM* compatible. 12 month warranty.

X20030 ... **ONLY $2,490**

8087 CHIPS

Genuine Intel chips with manual and data sheets packed in boxes!

8087-3 (4.77MHz)	**$195**
8087-2 (8MHz)	**$295**
8087-1 (10MHz)	**$395**
80287-6 (6MHz)	**$349**
80287-8 (8MHz)	**$499**
80287-10 (10MHz)	**$549**
80387-16 (16MHz)	**$899**
80387-20 (20MHz)	**$1499**
80387-25 (25MHz)	**$1799**

IBM* XT* COMPATIBLE COMPUTERS FROM $995

Check these features and our prices. We're sure you'll agree they're exceptional value for money!

- Final assembling and testing in Australia!
- Fast 8MHz TURBO Motherboard
- AT* style keyboard
- Tested by us for 24 hours prior to delivery!
- 8 Slot motherboard
- 12 months warranty!
- 150W power supply

*$995 COMPATIBLE COMPUTER

256K RAM Single Drive, Graphics and Disk Controller Card. ... **$995**

256K RAM TURBO COMPATIBLE COMPUTER

2 x 360K Disk Drives, Multifunction Card, Colour Graphics, Disk Controller, 1 Parallel Port. (Includes Timer Disk) **$1,095**

640K RAM TURBO COMPATIBLE COMPUTER

2 x 360K Disk Drives, Multifunction Card, Colour Graphics, Disk Controller, 1 Serial, Parallel Port. (Includes Timer Disk). **$1,195**

WITH 20 M/BYTE HARD DISK:
& single 360K Disk Drive . **$1,495**
& dual 360K Disk Drives .. **$1,695**

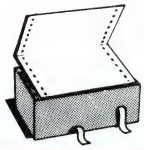
WITH 40 M/BYTE HARD DISK:
& single 360K Disk Drive . **$1,695**
& dual 360K Disk Drives .. **$1,895**

WITH 80 M/BYTE HARD DISK:
& single 360K Disk Drive . **$3,895**
& dual 360K Disk Drives .. **$4,095**

COPY HOLDER (YU-H33)

- Copy area 9½" x 11"
- Sliding line guide
- Flat metal base

C21060 ..... **$39.95**



COMPUTER PAPER

Quality paper at a low price!
2,000 sheets of 70 gsm bond paper.

C21003 11 x 9½" **$39.95**
C21005 15 x 11" . **$67.95**

THOMSON EGA MONITOR

Top quality high resolution EGA monitors with a space-age design.

SPECIFICATIONS:
CRT: 14 inch (360mm) diagonal, 90 degree deflection.
Display Size: 245(H) x 180(V)mm
Phosphor: P22, non glare, tinted screen.
Dot Pitch: 0.38mm
Video Bandwidth: 18 MHz
Resolution: 15·75KHz - 640 x 200
21·85KHz 640 x 350
Input Signals:
1. RGBI - positive, H(+), V(+)
2. RrGgBbI - positive, H(+), V(−)
Input Impedance: 330 ohms
Dual Scanning Frequency:
Horizontal: 15·75 KHz or 21·85 KHz +−10Hz
Vertical: 50 - 60 Hz
Connector: 9 pin, D-type
Size: 312(H) x 363(L) x 380(W)mm
Weight: 10·8 Kg (Net)

X14525 ..... **$695**
EGA CARD **$195**

Nº·1 FOR GREAT PRICES!

ROD IRVING ELECTRONICS

3½" DISK STORAGE (DD80-L)

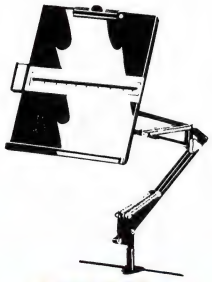
- Holds up to 80 x 3½" diskettes.
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact plastic base
- Contemporary design

C16038 ..... **only $19.95**

3½" DISK STORAGE

- Holds up to 40 x 3½" diskettes.
- Lockable (2 keys supplied)
- High impact plastic lid and base

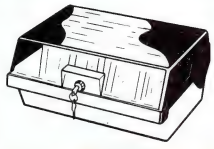
C16035 ..... **only $14.95**



COPY HOLDER (YU-H32)

- Adjustable arms allows easy positioning.
- Copy area 9½" x 11"
- Sliding line guide
- Clamp mounting

C21062 ..... **$39.95**



JUMBO 5¼" DISK STORAGE (DD120-L)

If you have lots of disks, you'll appreciate the extra capacity of this disk storage unit when it comes to locating a particular disk.

Features...
- 120 x 5¼" disk capacity
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact plastic base

C16028 ..... **only $19.95**

5¼" DISK STORAGE (DD50-L)

Efficient and practical. Protect your disks from being damaged or lost!

Features...
- 50 x 5¼" disk capacity
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- Contemporary Design

C16025 ..... **only $14.95**

"NO BRAND" DISKS!

Now you can buy absolute top quality disks that are also the cheapest in Australia! They even come with a lifetime warranty, which indicates the quality of these disks. So why pay 2-3 times the price for the same quality?

Packs of 10, D/S D/D without boxes, or brand name, just their white paper jacket, and index labels. (5¼" disks includes write protects).

5¼" 2S/2D "NO BRAND" DISKS

10+DISKS	100+DISKS	1,000+DISKS
$6·75ea	$6·50ea	$6·25ea

(ALL PRICES PER 10 DISKS. TAX EXEMPT PRICES LESS $1)

5¼" HIGH DENSITY DISKS

(DOUBLE SIDED)

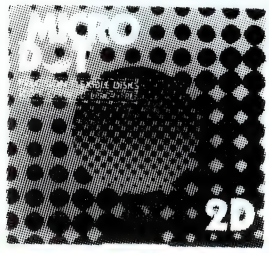
10+DISKS	100+DISKS	1,000+DISKS
$23·95ea	$22·95ea	$21·95ea

(ALL PRICES PER 10 DISKS. TAX EXEMPT PRICES LESS $1)

3½" 2S/2D "NO BRAND" DISKS

10+DISKS	100+DISKS	1,000+DISKS
$23	$22	$21

(ALL PRICES PER 10 DISKS. TAX EXEMPT PRICES LESS $2)



MICRODOT DISKS!

FREE PLASTIC LIBRARY CASE WITH EVERY 10 DISKS!

DESCRIPTION	1-9 BOXES	10+ BOXES
3½" 2S/2D	.....$32.95	$30.95
5¼" 1S/2D	.....$ 9.95	$ 9.50
5¼" 2S/2D	.....$11.95	$10.95
5¼" 2S/HD	.....$23.95	$22.95

5¼" DISK STORAGE (DD100-L)

Efficient and practical. Protect your disks from being damaged or lost!

Features...
- 100 x 5¼" disk capacity
- Smoked plastic hinged lid
- Lockable (2 keys supplied)
- High impact ABS plastic base.
- Contemporary design

C16020 ..... **only $15.95**

DATA TRANSFER SWITCHES

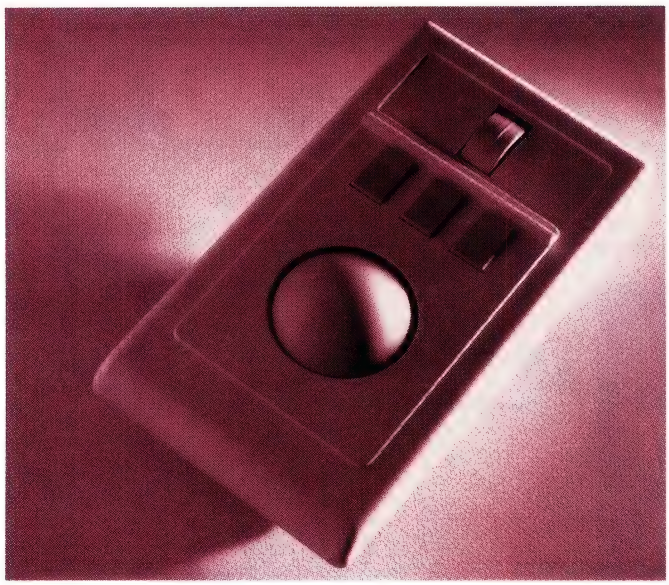
If you have two or four compatible devices that need to share a third or fifth, then these inexpensive data transfer switches will save you the time and hassle of constantly changing cables and leads around.

- No power required
- Speed and code transparent
- Two/Four position rotary switch on front panel
- Three/Five interface connections on rear panel
- Switch comes standard with female connector

2 WAY RS232 X19120 ..... **$49**
4 WAY RS232 X19125 ..... **$59**
2 WAY Centronics X19130 . **$49**
4 WAY Centronics X19135 . **$59**

ROD IRVING ELECTRONICS

FastTRAP



Reluctant mouseketeer, David Chatwin, debates the merits of a new type of trackball mouse – FastTRAP.

I SUPPOSE IT WAS only a matter of time before people set out to catch the mice which are now inhabiting our desks. The latest one to come my way is a trackball called FastTRAP (or FT to those who have netted their first mouse . .).

I have to confess right at the start that I am a sometimes reluctant mouseketeer, but I recognise their inherent advantages in such applications as Cad and word processing. My mouse certainly gets a fair bit of use, but I don't abandon the keyboard for the mouse if at all possible.

Anyway, the latest pointing device to hit our desks is called a trackball. A trackball can best be described as a sort of upside down mouse, with the wheel which normally sits under the mouse in contact with the desk, now sitting on the top in contact with your hand. The buttons one usually associates with a mouse are still there, and some trackballs like FastTRAP have an extra wheel above the buttons. I will reveal the mysterious secrets of this extra wheel a bit later on.

FT is not small, it measures 105 mm wide, 190 mm long, and 65 mm high at its tallest point. At its lowest point it is still a fairly big 45 mm high. The trackball sits about a third the way up the front face, and is about 50 mm in diameter. Above the ball are three buttons, each of a respectable size, and right near the top of the beast is a wheel which is about 15 mm wide and which is oriented vertically.

FT plugs into a 25-pin serial socket, and there is no 9-pin adapter supplied for AT type machines.

The innards

The insides of FT look like an overgrown upside down mouse, with two opto-electronic sensors for the ball, and another for the wheel. There are three microswitches for the buttons, and a bank of four DIP switches for setting the communications standard for the serial port. The circuit boards seem well designed and made, and everything appears to be made in the USA.

The FT feels a little bit light weight overall, and my personal feeling is that it may not be as robust as those pesky little rodents we have running about our desks right now.

Configuring your FT is easy, and is done using either the supplied SYS driver, or the COM program, just as you would for a Microsoft Mouse. In fact, FT can emulate the Microsoft Mouse, using the ordinary Microsoft drivers, if you so wish. In this case, the middle button is obviously redundant, as Microsoft mice do not have three buttons. In normal use, FT can be used to replace a Microsoft Mouse quite happily, and without any dramas.

If you want to use your FT with Word, you will have to use the Microsoft drivers, because there appears to be some incompatibility between Word and the FT drivers.

The user's guide supplied with FT is quite comprehensive, and includes a very detailed technical section which explains all the FT functions and interrupts used. This would be invaluable for someone who likes to dream up their own applications for their pointing device.

FT is supplied with a program called KeyMAP, which allows you to make up templates for using your FT with software which would not ordinarily use a pointing device like a mouse or trackball. KeyMAP struck me as being at least as good as the equivalent programs for most of the mice on the market, and in some respects it was perhaps even better.

Using FT

In use I found the FT to be less than ideal. The first problem is figuring out how to use the beast. I find that when I am using my mouse, my hand fits quite comfortably over the rodent's back, with index and middle fingers poised over the buttons ready for instant use. Moving the mouse and clicking a button is simplicity itself.

However, with the FT, I could not get comfortable. To start with, the ball forms an uncomfortable lump in the middle of your palm, and makes you feel like you are caressing the tummy of a pregnant mouse.

Next, to move the pointer, you have to roll the trackball around. I hear you say 'that can't be too difficult!', and it's not. The problem is, that to roll the trackball you must move your fingers away from the buttons, as you have to roll the ball under your palm. This means that when you want to press a button, you have to pick your hand up from the ball, reposition your fingers on the buttons, and press away.

But by this time, you are sure to have bumped or moved the ball, so you are no longer pointed at what you wanted. This necessitates a repeat of the whole process, so that eventually you get what you wanted. The only problem being that it took me about five times longer to achieve the required result than it would have with a mouse.

Given the above difficulties, a 'click and drag' where you point to something, and then continue highlighting or moving something by holding a button down whilst moving the ball is nearly impossible.

The makers of FT have obviously recognised this problem, as it is possible to define the middle button as a 'drag' button that will start cursor drag on the first click, and turn it off on the second click. This is not a bad solution, but I found it not to be as easy as a normal mouse click and drag, mainly because of the problems with clicking and cursor movement outlined above.

I did try using FT by keeping my fingers over the buttons, and using my thumb to move the ball. All this achieved was a nearly dislocated thumb.

Using FT with Microsoft Word was less than satisfactory, as the cursor seemed to jump a lot, instead of moving smoothly. Whether this was a result of the difficulty in using the trackball, or an incompatibility with Word, I don't know, but the manual did mention possible problems with Word.On other software packages, FT seemed to work okay (given the problems mentioned above), but it was never as easy or as 'natural' as a mouse with any package.

The wheel

Somewhere in my rambling above, I mentioned the wheel positioned at the top of FT. This wheel is rather intriguing. It can be used to input motion on a third axis on the screen, for example in three-dimensional drawing, if you can find a Cad package which supports the feature.

Seeing there is no software that I know of that will use this feature, the wheel is more normally used to control the sensitivity (or gain) of the ball. Turning the wheel one way will increase the sensitivity of the ball, turning it the other way reduces the sensitivity. Unfortunately, you have no way of knowing when the wheel is about to complete a revolution, so you can find yourself quickly going from the most sensitive setting, to the least sensitive without realising what you have done.

The manual supplied with FT gave a lot of details on possible uses, as well as all sorts of technical information on the interrupts used, and so on. This may be very good for hackers, but for ordinary users it will be no use at all. Apart from that the manual was not too bad, but not up to the standard of, say, the Microsoft Mouse manual.

The FT manual is also full of possible applications for the extra features of the trackball, but I know of no software that will support these additional features. The chances of software being written to use FT to its full advantage seems remote, as it would appear not to have the market penetration needed to warrant the investment in re-writing software.

This means that you will wind up using FT as a direct replacement for a mouse. To me, it fails in this role, as it a lot harder to use than a mouse, and just does not feel as 'natural'.

Of course, these are my own feelings, and you may find that you much prefer using a trackball (especially FT) over a mouse, but I am afraid that this trap will not be catching any mice in my house.

Product Details

Product: FastTRAP
From: MicroSpeed Incorporated, Ca. USA
Distributor: Bryte Software Services, 95-99 York St, Sydney 2000 NSW; (02) 220 6702
Price: $310 taxed

AT LAST!

A HIGH SPEED FULL FEATURED MODEM YOU CAN AFFORD!

Time costs, so fast, reliable communications means savings to you.

It's taken the market by storm;

MAESTRO 2400ZXR

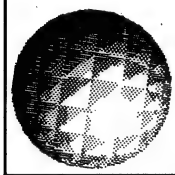
with features you want;

★ 2400/2400, 1200/1200, 1200/75, 75/1200, 300/300
★ CCITT and BELL standards
★ Automatic Answer/Dial/Disconnect/Baud Sensing
★ Pulse/Tone dialling
★ Call progress monitoring
★ Line condition monitoring
★ Full AT capability
★ Programmable Accessible Super 8, 20MHz microprocessor with FORTH Operating System (32k ROM, 8-32k RAM battery backed option)
★ RF shielding metal case enclosure

And Reliable? — Tests have shown that performance of the Maestro 2400ZXR equals or is **better** than any 2400 Baud modem currently on the market! We back this up with a full 6 month warranty. Until now a modem like this was usually out of the question — too expensive!
(Similar modems cost $800-$1600)

Our Price: $396 inc tax

AND we include a **FULLY SHIELDED DATA CABLE** with High Quality connectors — absolutely **FREE**. Further discounts on two or more — please ring



Dealer enquiries welcome
(08) 255 0647
Bankcard Mastercard
LIVING IMAGE
Box 409, ELIZABETH, SA 5112

Please deliver my Maestro 2400ZXR Modem(s) and free Serial Cable: ☐ 9 pin AT ☐ 25 pin XT

Number of modems needed: _____

Enclosed find Cheque/Money order/Bankcard/Mastercard

No._____ FOR $_____

(Add $8 for insurance and delivery)

NAME: _____

ADDRESS:_____

_____

Finally it's here!

Hard Disk Backup On Your Existing VCR!

Up To 240Mb Storage Capacity

This has to be one of the all-time great inventions of the decade! It acts just like a streaming tape drive at a fraction of the cost!

You can backup all your hard disk data on a normal video tape - using your existing VCR. In fact you can hold the eqivalent of about 600 floppy disks on one standard 4hr video tape! Just think of the time and disk swapping you'll save.

A 4hr video tape will hold up to 240Mb, so you'll have all the storage capacity you need on VHS or Beta!

Comes complete with slip-in circuit board for quick and easy internal mounting, manuals...the lot! Cat X-3840

Sensational Value! **$499**

Suits IBM, Apple and Commodore!! **BARGAIN 3-IN-1 GAMES SOFTWARE.** Here's real value for your dollar! The fantastic new range of 3-in-1 software with some of the most adventurous games you'll ever play. Each pack comes with 4 to 8 different games! Plus you get disks to suit IBM, Apple and Commodore computers. All you do is run the disks to suit your computer and reformat the other two — that way you get two free disks as well. Look at these great tiles . . .

Arcade Games

Two disks containing some of your favourite arcade games! Pack includes Red Baron, Paratrooper, Frog, Cue, Invader, Golf, QBC and Archery. Cat X-9025

Challenger Pack

Great value and great fun! All your favourite board and space games. With the old favourites such as Backgammon, Chess, and Yaht-zee plus Flip it, Space Trek, Flight Mare, Space Bugs and Round 42. Cat X-9026

Vegas Games

Great fun if you're into chance! With Blackjack, Poker, Craps, Roulette and Solitaire! Cat X-9027

Adventure Quest IV

Can you handle the pace? The ultimate in action and adventure without leaving home. Includes Computer Battleship, Hi-Cue, Flipper and Fire Out. Cat X-9028

All One Low Price! $29.95 ea

"... one of the nicest entry level PCs available!"

That's what Your Computer, Australia's leading computer magazine had to say about the Series II Acer 500+. When you consider that they see every computer on the market, it says a lot for the incredible Acer 500+.

Here's why! There's an Acer 500+ for just about every application and they're all exceptional value for money! Fast, powerful and with more standard features than any other computer at the price. In fact, it's the only computer that comes with our unique colour emulation software that lets you run all your CGA software on the TTL monitor in four shades of grey.

The Acer 500+ is ideal for . . .

- WORD PROCESSING
- EDUCATION
- BUSINESS APPLICATIONS
- FUN & GAMES

Choose a system:

SYSTEM 1

256K memory (expandable to 640K), single disk drive, soft white monitor, real time clock, MS.Dos V3.3 software, 4.77/8MHz clock speeds...and more! Cat X-8060

$995

SYSTEM 2

All the incredible System 1 features but with 640K memory and twin floppy disk drives! Cat X-8061

$1495

SYSTEM 3

20Mb hard drive with 640K memory and single floppy disk drive. A boon for business! Cat X-8062

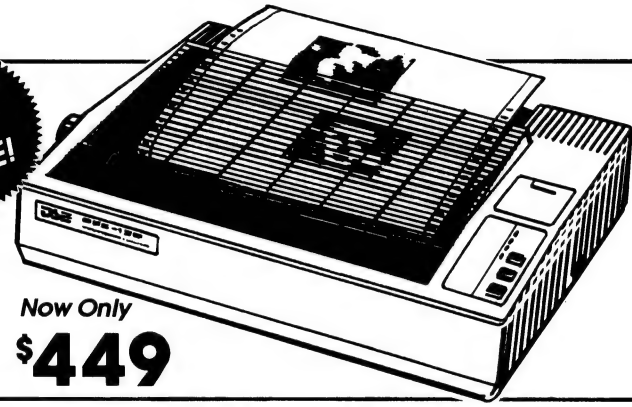
$2095

All Acer 500+ computers come with 12 months warranty

Budget printer does it all!

NEW LOW PRICE!

You'd expect to pay much, much more for a printer with these features. The DSE 135 Dot Matrix Printer gives you the choice between lightning fast speed or near letter quality. IBM graphics compatible printer with up to 135cps or near letter quality (27cps), inbuilt tractor feed, handles alpha numeric, semi graphics, bit image, paper width 101mm to 254mm and more! It even does italics! Cat X-3225



Was $499 Now Only

Now Only

$449

DICK SMITH ELECTRONICS

• **NSW** • **Albury** *21 8399* • **Bankstown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Warringah Mall** *05 0441* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *43 0388* • **Box Hill** *890 0699* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Buranda** *391 6233* • **Cairns** *311 515* • **Chermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *232 1200* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Cannington** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

ORDER BY PHONE TOLL FREE (008) 22 6610 for DSXpress 24 HOUR DESPATCH.

The Handy Scanner

Every now and then Ewart Stronach gets his mitts on a product which is heaps of fun as well as a serious tool.

THE HANDY SCANNER HS-2000 looks for all the world like a large mouse (or small rat) with a large head, with the addition of a single button and a small window. It's about 13 cm across the head of the T section, 9 cm long; it fits well into a cupped hand.

Apart from the aforementioned top controls there are two additional controls on the side which can be adjusted comfortably with the thumb (if you're right-handed) whilst operating the unit. These control the intensity of the picture being scanned and give a selection of scanning criteria from pure black and white through to half tones. It really is the simplest thing to use and I was producing printable pictures within minutes of unwrapping it.

The instructions for inserting the card are a highly technical four lines –

1) Turn off the power to the PC.

2) Plug the scanner adapter in an available slot.

3) Turn on the power.

4) Run the scanner utility as described on the next page.

This major task behind you, simply put the provided disk in drive A: and type SCAN. The screen displays a simple menu offering the choice of video displays ranging from Hercules mono display through standard colour graphics (CGA) to enhanced graphics (EGA). I have run the card under all configurations and finally settled on EGA in my ALR 286 AT clone with a VEGA EGA card driving a Multisync monitor. The display in this set-up is as good as the Hercules mono display, with the advantage of being able to transport the resultant picture files to programs which run in colour mode. The scanner produces only black and white images but can be modified with such programs as DR Halo or PC Paint.

After selecting your monitor type, the screen clears and displays a page not unlike Microsoft Windows with a menu bar across the top, a sample file displayed in the lower left segment and a reduced display of the whole available image in a column down the right hand side. If you have a mouse, it will happily co-reside and the program can be used in a point-and-click manner.

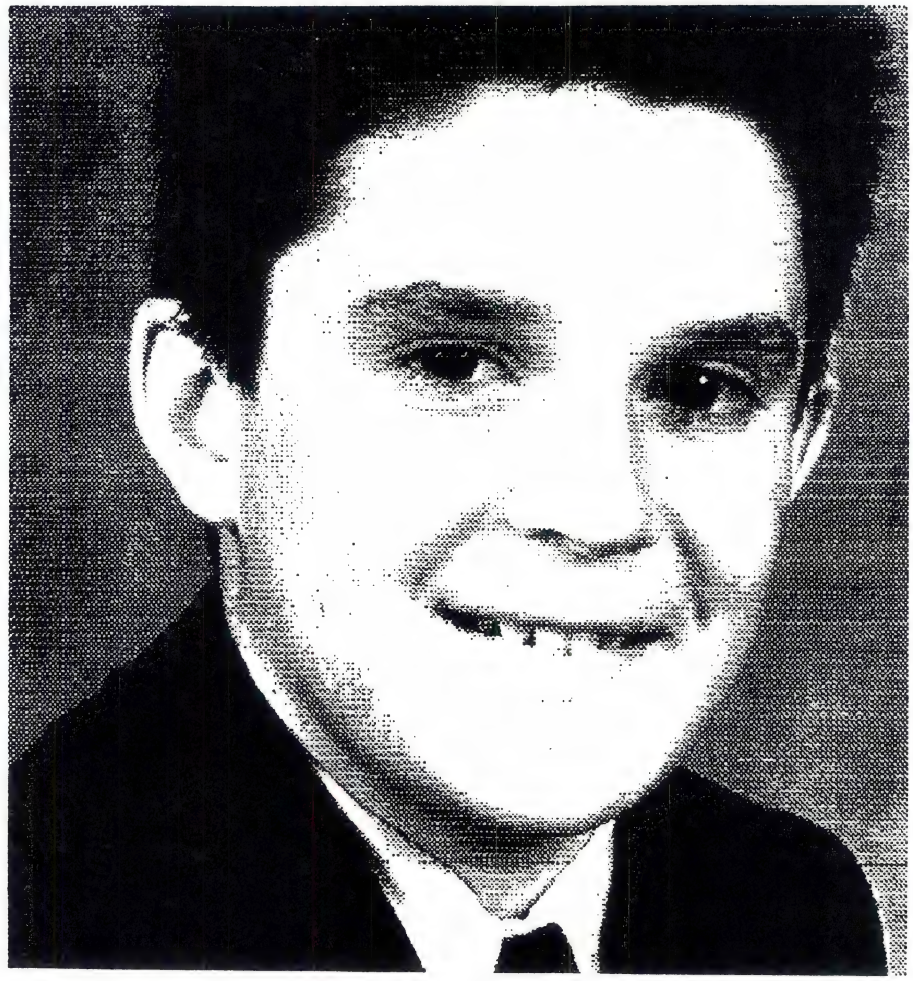


Figure 1. *I scanned a colour school photo with medium contrast and on low gloss paper of my son. I tried each of the scanning modes – the first mode is pure black and white and produces a tone reduced effect; the second is for half tones (it's marked 'photo'); for a colour picture like this one, I found half intensity about right.*

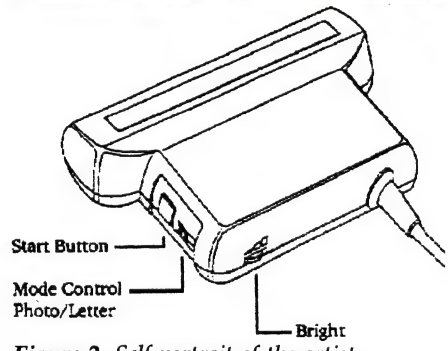


Figure 2. *Self-portrait of the artist.*

Handy scanning

The menu bar is as simple and easy as the rest of the unit. It offers File, Scan, View, Cut Top, Cut Bottom and Slow/Fast Cursor Movement. Simply place the scanner on the illustration you need to copy, press S for scan and, holding down the button on the handpiece, drag the scanner across your target. Instantly your efforts are echoed on screen. If the result is not up to your expectations, you can adjust the side controls and try again. The unit will scan a width of 10.5 cm but can be pulled down a total of about 25 cm. The display on screen moves down as you progress down the subject and the right hand column shows a reduced view of your total picture strip.

At this stage you are able to edit the whole screen. As you move your mouse cursor over the picture, a small window appears and moves with the mouse. Pressing the left key enlarges this window to full screen size and you can toggle the colour of each pixel. This allows a fair degree of flexibility before saving the file for printing or further editing with another program.

Next, you mark the top left corner of the chosen section of the entire picture, then the bottom right, and save the portion you have marked. Upon selecting Save from the menu you are offered a choice of file types.

The file name defaults to HS1000.MSP, a Microsoft Windows type and the normal method would be to simply increment the file name number to HS1001.MSP for your second file. The name may be changed to anything you like of course, but the programs you choose for subsequent display will look for their own unique suffix. In addition to Windows, the file types offered are GEM with an .IMG file name and DR Halo with a .CUT suffix.

The only other option available at save time is a choice of layout for your picture. The screen can be saved as displayed or rotated 90 degrees. A full screen uses 180 kilobytes.

Handy uses

OK, we've got ourselves a picture, on screen and on disk. What do we do with it now? There appears to be no provision for printing the image direct from the driver program, although when I accidentally hit the Escape key at one stage, I was rewarded with a single pass, low quality, negative image. The file must be read into your choice of graphics editor and most editors will read one of the available file types. Ventura was my first choice and the files read without difficulty.

It's easy to experiment with the settings as you go and the screen image is very close to the resultant print. Very nice effects can be achieved with the black and white only mode; newspapers respond particularly well to scanning. The limitation of the width of scan can be overcome using a good editor to marry two picture files (provided you have not changed any parameters between scans, of course). You must be careful to drag the scanner straight down the page or your horizontal lines take on some strange angles. I found it advantageous to place a ruler on the work I was scanning as a guide for the edge of the handpiece. The speed at which you move the scanner is not critical as it is capable of reading up to 3 cm a second and a steady movement down the page produces the best results. You can stop during the movement period but run the risk of knocking the scanner off line when you start again, resulting in a kink in your picture file.

The resultant resolution of the picture is quite good at 200 dots per inch in each direction. Full page scanners give a lot higher resolution than this, but are also priced much higher. The HS-2000 is not a toy. It has a serious practical application in almost any situation using desktop publishing. The only apparent hardware conflict is the use of a DMA channel and two I/O ports – this could pose a problem in setting up your scanner in a machine with three Line Printer ports assigned. There is provision on the control board to overcome this and the settings for the necessary jumper changes seem clear enough.

As with so many applications now, EGA display is a decided advantage. Using CGA does not alter the final print quality, but the ability to edit your work is enhanced by the finer display.

The software supplied (at no extra cost and valued at $195) offers total editing facility and printing options for those who do not have an expensive desktop publishing application. Halo DPE (Desktop Publishing Edition) comes with a well written and illustrated manual and allows extensive modification of your file before printing it out direct or filing it in one of the two other formats desired. It is icon driven and ideally guided by a mouse.

This scanner is the most efficient low cost method I have seen for getting good quality graphics out of someone else's publications and into mine.

Figure 3. *The Handy Scanner HS-2000 comes neatly packaged – the plastic box contains the handpiece and short slot drive card along with the single software disk and manual. The box also contains three other disks which carry the Halo DPE software and extensive manuals. The card uses a miniature DIN plug to connect a light cable to the scanner.*

In summary: it's fun, it's fast, it's efficient and it works. From a cold start I am able to load the scanner software, 'take' a picture, file it, transfer it to Ventura and print it out inside five minutes. The printing process is the longest part of the production. It will make a creditable reproduction of a coloured photo and a good reproduction of a half tone. It is at its best in reproducing straight black and white illustrations.

Is it too early in the year to start on my Christmas list? □

Product Details

Product: Handy Scanner HS-2000
Distributor: Sancom Computers, 1 Athol St, Leichhardt 2040 NSW (02) 568 2660
Price: $499 taxed

DesignCad 2-D and 3-D

For those who only need a basic Cad package, or who want to try one to see if Cad is the way to go, David Chatwin found these two successors to ProDesign II could well do the trick.

YOU COULD BE FORGIVEN for looking a little confused when confronted by one of the newest players in the Cad market. DesignCad looks and feels just like ProDesign II, and so it should, as it is simply a new release with a name change. However, DesignCad sports more than 100 enhancements over ProDesign II, and I am going to attempt to uncover most of them.

What has prompted the name change eludes me, but the package is a definite upgrade from its predecessor, and we now also have three-dimensional Cad available with the new DesignCad 3-D package.

I reviewed ProDesign II, in the December '87 of *YC*, so I will concentrate on the differences between ProDesign II and DesignCad before getting my teeth into DesignCad 3-D.

The first difference I noticed is that DesignCad comes on ten disks, instead of four. There are two program disks, one for use with a co-processor, and one without. The next two disks contain the configuration information as well as various utilities, which I will cover in more detail later. You then have a disk which has the print program for outputting drawings to a printer, and a character fonts disk which contains all the various fonts that can now be used with DesignCad. There are three disks of various symbol libraries, and the last disk houses some sample drawings.

Setting up

Design Cad is about as unfussy as ProDesign II in terms of hardware requirements. 512 kilobytes of RAM is needed. Apart from that, DesignCad will run on almost anything, including PCs, XTs, ATs and PS/2s, but I would suggest that a minimum requirement would be 640 Kbyte of RAM, EGA graphics (though CGA does not look too bad), a mouse and a plotter (but a dot matrix printer will do). With the big increase in the number of program disks, I would also have to recommend a hard disk for serious users.

Installing DesignCad is done in exactly the same manner as ProDesign II: copy the relevant disks onto your hard disk, and then run the setup program. SETUP has been improved a bit, as you only have to go through all the hoops on the initial setup.

Once you have done your initial setup, running the setup program again gives you the chance to change only those things you want to, which is a big improvement over the ProDesign II days when you had to go through the whole procedure just to change one minor detail. The setup program will also display the current settings, just so you can see what you have configured.

DesignCad supports over 200 printers and now will support colour printers, as well as over 80 different plotters. Thirty-odd graphics adapters are supported, including VGA, and all sorts of mice and digitizing pads will work with the package.

The documentation for DesignCad is an improvement over that for ProDesign II, but only marginally. There is now a separate installation and tutorial booklet, as well as a reference book. Both look more professional than their predecessors, but could still be improved. They are, however, well laid out, with a good index and table of contents, and I found it easy to look up the details on any command that I wanted. The details on each command give both the menu structure required to get to the command, as well as the keystroke/-command name that can be used to bypass the menus.

The tutorial now has six lessons, taking you through most aspects of using DesignCad, including scaling and dimensioning. It is refreshing to see a Cad package offering a reasonable tutorial for a change.

User interface

One of the first changes in using the package that comes to sight is in the user interface. All commands can now be accessed in one of two ways. The first is by using the menus that appear down the right hand side of the screen. These menus can be accessed using either the mouse or the cursor control keys.

The second way is by using either a keyword or keystroke reference to the command. Some commands can be called simply by pressing the appropriate key(s), for example V (for Vector) will draw a line and Alt-Q will bring up the system parameters screen. If there is no keystroke combination for the command, you simply have to press Enter, and then the command name (for example, SAVE) to execute the command.

I found both of these methods preferable to using the menus, basically on the grounds of speed, but the menus are there for the not very experienced user if needed; experienced users can turn the menus off. The menu structure can be customized, a feature which up to now I have only seen on the likes of AutoCAD.

Moving on with the internal changes between DesignCad and ProDesign II, the range of text fonts has been increased from 3 to 16, including Script, Greek, Cyrllic and Gothic. There is also a command to draw text along an arc, instead of just in a plain straight line. I have not seen this offered in a Cad package before, and it can give some interesting results. This text manipulation ability would have to make DesignCad one of the best Cad packages around in terms of its text abilities.

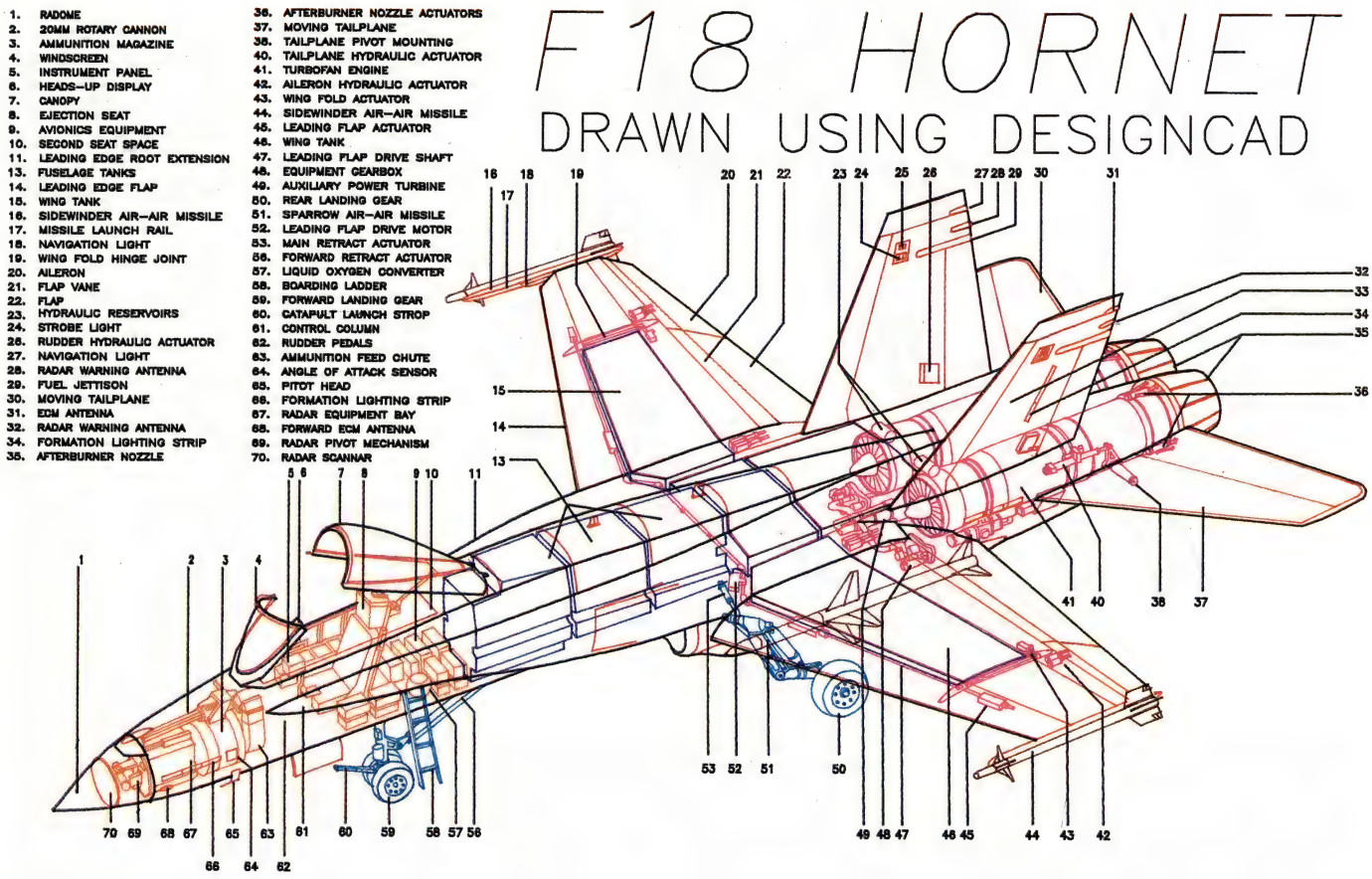


Figure 1. A design of the F18 Hornet drawn using DesignCad 2-D, also showing a legend.

The range of hatching patterns has also been increased, with DesignCad offering a total of 39 different types of hatching – there would have to be a hatch pattern here for every occasion!

Dimensioning capabilities have been improved, with six standard formats now available, giving different line and arrow types, as well as decimal and fractional measurements.

DesignCad now also offers macros, which can be especially useful for storing often used commands and drawing segments. I have had a love-hate relationship with macros over the years, but I reckon it is great to see a package of this type offering macros.

There have also been a lot of extra drawing commands added to DesignCad over ProDesign II, and to list them all here would be pointless. Some examples are commands to draw quarter and semi circles, and a command join all endpoints of lines in a window to a common point. Suffice to say that these extra commands have done wonders to increase the overall usefulness of DesignCad.

Extras

The other main differences between DesignCad and ProDesign II are in the extras bundled with the package. DesignCad now boasts a DXF file transfer utility, the materials list program and 16 symbol libraries as standard with the package (not optional as they used to be).

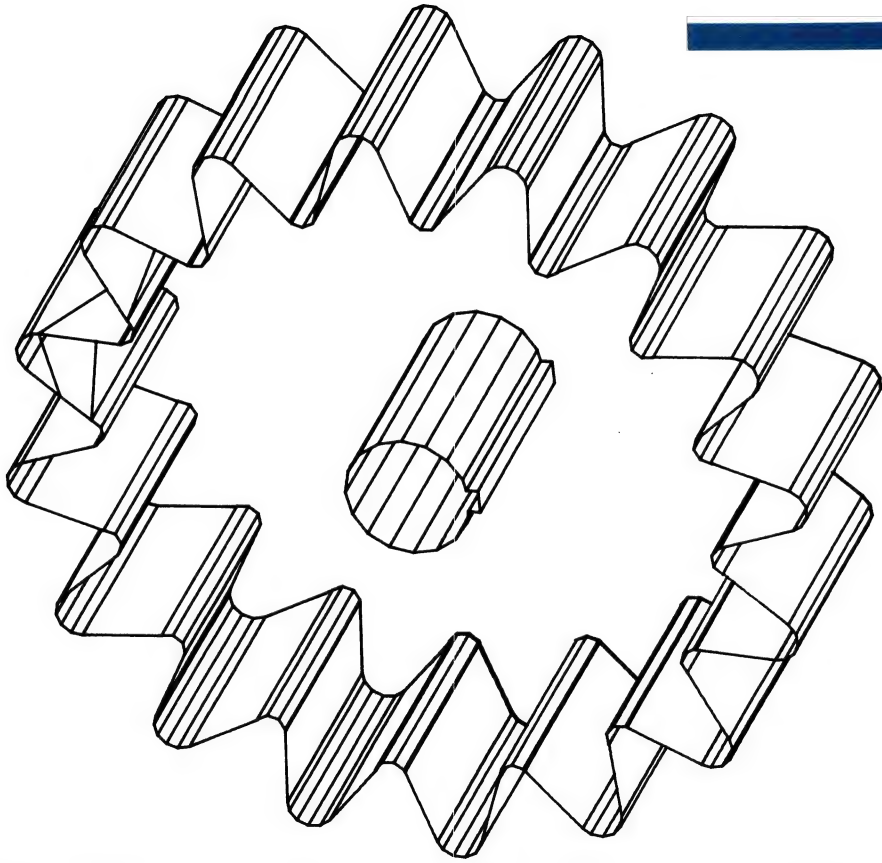
The DXF file transfer utility now means that DesignCad can transfer drawings to and from the 'real' Cad packages like AutoCAD and CadKEY. The value of this utility cannot be overlooked as it may make DesignCad a viable alternative in areas that have up to now been committed to the likes of AutoCAD.

The materials list program can extract all the attributes that have been assigned to various objects within a drawing, collate them, and output the list to the screen, a printer or to a disk file. Obviously, if you output to a disk file, you can then use this list to produce estimates, bills of quantity and so on, using third party software (such as a database).

The number of symbol libraries that come with DesignCad is excellent, with 10 architectural libraries, and electrical, electronic, hydraulic, piping and two building symbol libraries as standard. All in all, they offer several hundred standard symbols, that again increase the overall usefulness of the package.

Unfortunately, the one thing that has not changed from ProDesign II is the speed of operation. One of my few complaints with ProDesign II was that it was very slow in operation, even with a co-processor. Well, DesignCad has continued the tradition, with some operations taking an annoying length of time to complete.

File loading and saving is a real cut-lunch affair, with big or complicated drawings seemingly taking forever (and maybe even a day extra) to complete. To be fair, the drawing speed is not inconsistent with the cost of the package, and is acceptable for the majority of operations. But if you



want horsepower, you will have to spend ten times (or thereabouts) the cost of DesignCad to get AutoCAD or CadKEY.

The other main complaint I had with ProDesign II was that the printing routine is a separate program to the main program. Nothing has changed with DesignCad in this respect, and you still have to save your drawing before going to the print routine, just so you can re-load it to print it. On a large drawing this can be an exceedingly time consuming effort, and it is one area that the designers should look at improving if DesignCad is to live up to its aspirations of being a serious Cad package.

As with ProDesign II, DesignCad is not an all singing, all dancing Cad package in the AutoCAD tradition. But then, it doesn't set out to be, and is not marketed as such. If you need the features that AutoCAD and its competitors offer, then DesignCad is not going to suit you. But if you want a simple, fairly easy to use Cad package with a good range of features, and a less than frightening price tag, then DesignCad might be just the ticket.

New users

For new users, the same comments that I made about ProDesign II apply to DesignCad. It is an excellent entry level Cad package, especially for those who are not sure if Cad is for them. It would also make an ideal choice for those people who need a Cad package, but cannot justify the cost of the big boys like CadKEY and VersaCad.

The only warning I would like to give to these potential users, is don't expect a fast package, because the speed of DesignCad is acceptable, but anything but fast. Now, if only I could get the writers of DesignCad to speed it up, and tie the printing routine into the main package, I might stop lusting after my own copy of CadKEY (reviewed in *YC*, Sept. '88).

DesignCad 3-D

The other new player on this Cad stage is DesignCad 3-D. Now, three-dimensional Cad packages are one of those things that you either love or hate (or love to hate), but I quite enjoy playing around with them. They are very useful for architectural drawings, to give people a bit of a 'feel' for what a building will look like, and also for producing drawings showing what something like a machine part is going to look like.

DesignCad 3-D fits comfortably with these perceptions of a 3-D Cad package, with the proviso that, like DesignCad, it is definitely a low level package. But you have to remember that it has a low level price tag too.

DesignCad 3-D requires the same sort of hardware as DesignCad, and it supports the same range of hardware. In fact, the two programs share a common setup file if they are installed on the same directory. The similarity between the two packages is striking, as they share an almost identical command set, with some differences to take account of the different nature of 2-D and 3-D drawings. The user interface is also identical in operation, again making the transition between the two packages painless.

Getting into the details of DesignCad 3-D, the first thing I liked was the screen. The drawing screen is similar to DesignCad, with a status line across the top of the screen, and the menu (if you want it) down the right hand side. The centre portion of the screen is given over to the 3-D image of your drawing, at whatever viewing angle and perspective you have chosen (more on this later).

However, down the left hand side of the screen you are presented with three smaller screens, one above the other, which show the top, side and end views of the object. These screens can be altered to show the object from different angles and heights and they are updated in conjunction with the main screen, and the cursor position is shown on all four screens simultaneously. This four-screen projection is absolutely great, and makes for much easier drawing in 3-D. The only penalty to the four screen approach is a slight sacrifice in speed, but if speed is important to you, then you can turn any or all of the top, side and end views off.

Commands

Block commands are well handled, especially those dealing with 'extrusions'. Now, an extrusion in 3-D is the process whereby you take a two dimensional object, and project (or sweep) it through space to form a three dimensional object.

What I really liked about the way that DesignCad 3-D handled this process, is that you can specify two ways of scaling the extrusion. In the first method, you can scale each segment of the extrusion to be a certain size relative to the previous one. This can give a real impression of perspective for an object, as it disappears into the distance, getting smaller and smaller. The second method of scaling involves extruding with varying scaling factors, so that you can easily make an extrusion big then small, then big again. This great for drawing things like the traditional 'barbell' shape. DesignCad 3-D has all the commands you would expect for drawing such things as boxes, cylinders, spheres (or balls), hemispheres, and so on.

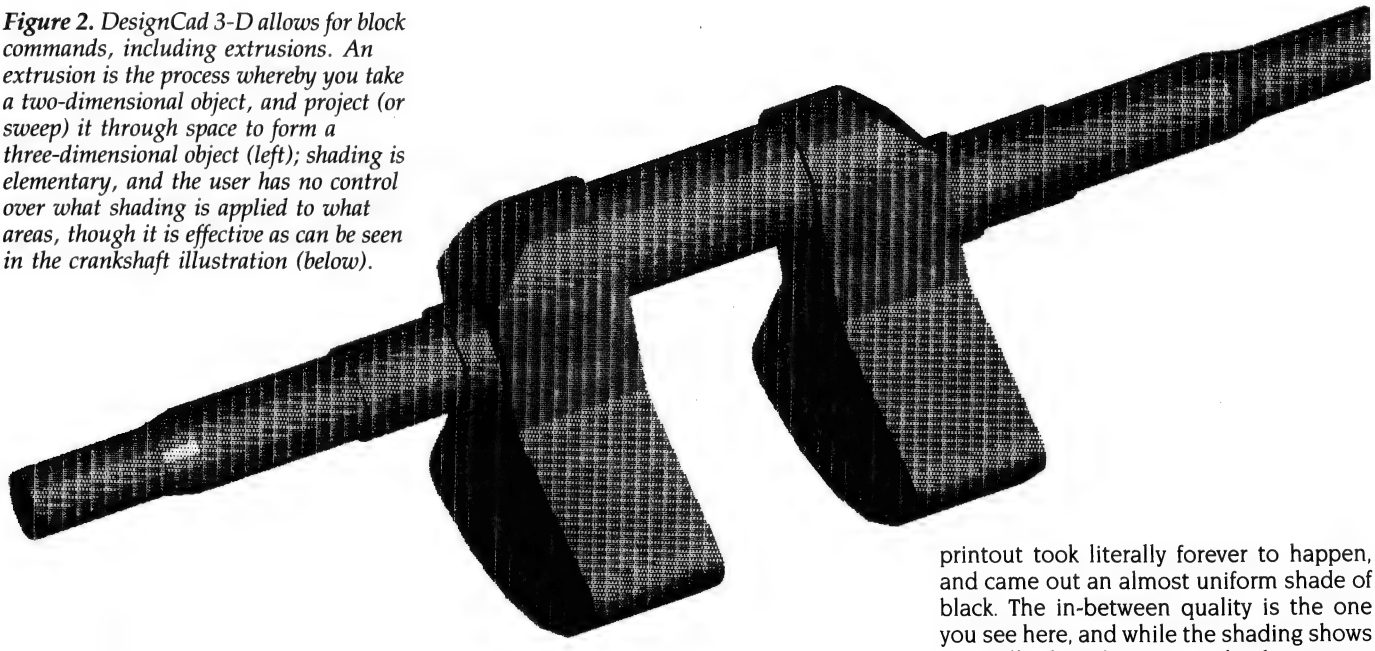


Figure 2. *DesignCad 3-D allows for block commands, including extrusions. An extrusion is the process whereby you take a two-dimensional object, and project (or sweep) it through space to form a three-dimensional object (left); shading is elementary, and the user has no control over what shading is applied to what areas, though it is effective as can be seen in the crankshaft illustration (below).*

DesignCad 3-D also offers the same sort of dimensioning facilities as DesignCad, with the choice of six different dimension formats. Text input is handled in a similar manner to DesignCad, with the same 16 fonts being on offer. Like all good 3-D Cad packages, DesignCad 3-D offers hidden line removal. The speed of hidden line removal is what you would expect, given the overall speed of the package, but is not as fast as the big boys (which are several times the price, too).

Like DesignCad, DesignCad 3-D also offers a good macro facility, which is a surprise in a package of this cost.

Another command which took my fancy was the PERSPECTIVE command. This enables you to change the apparent distance from which you are viewing the drawing. For architectural drawings, this is great fun to play with, as you can see what your building will look like from close up and far away. I expect it would have some use in other areas as well, and again, to see it on a package of this cost is rare.

Like DesignCad, the printing program is separate to the main program and necessitates saving your drawing before you can go to the print routine, where you promptly have to reload your drawing to print it. Because of the time that DesignCad and DesignCad 3-D take to save and load a drawing this can turn into a very long and frustrating process.

I was disappointed to find that the plotting routine will only produce black and white outputs if you decide to remove hidden lines or do shading on the plot. This seems crazy on a package that will otherwise support colour printing, plotting and drawing. Otherwise, the plotting routine is as easy to use as DesignCad, and worked well. DesignCad 3-D will allow you to save the current view of your drawing in a two dimensional form, so that you can play with it in DesignCad (or other 2-D Cad packages).

Shading

DesignCad 3-D offers a SHADE command which I usually only expect to see on the big Cad packages. The shading is elementary, and the user has no control over what shading is applied to what areas. Given this, the shading is very effective at highlighting the different aspects of a 3-D object, such as the crankshaft illustration.

Now, having said how good the shading facilities are, I was very disappointed (maybe even frustrated) to find that there is no really acceptable way of outputting the shaded image to paper. I first tried using a plotter (Roland DXY-880A), but the result was comparable to the results you might get with PC-Paint. In other words, very rough and not at all presentable, with steps along diagonal lines rather than smooth lines, and very poor shading rendition.

My next step was to try my dot matrix printer. On the lowest quality printout, the result was 'washed out' and barely showed the shading. The highest quality printout took literally forever to happen, and came out an almost uniform shade of black. The in-between quality is the one you see here, and while the shading shows up well, this drawing took almost two hours to print! This is obviously not a satisfactory procedure, and one the designers need to look at.

I have a sneaking suspicion that the best quality output would most probably come from a laser printer, but unfortunately I could not get my hands on one in time to try it out.

All in all, I would have to apply the same comments to DesignCad 3-D as I have to DesignCad. It would make a good entry level 3-D Cad package, and an excellent offering for those who want to see what 3-D Cad is all about, without investing huge sums of money. I must say that both packages seem caught between a rock and a hard place (so to speak). They both seem to be trying to offer big-boy facilities, while trying to remain small time operators.

At the end of the day, if you are after a cheap Cad package, with moderate horsepower, a good command set, and a good user interface, and are prepared to put up with some shortcomings in terms of speed, and annoying printer programs, then I don't think you can go past DesignCad and DesignCad 3-D. □

Product Details

Product: DesignCad nd DesignCad 3-D
Distributor: Software Suppliers, 7 Avon Rd, Nth Ryde 2113 NSW (02) 888 1955
Price: Each $650 taxed

Business Graphics

Anyone to whom 'business graphics' still means a Lotus chart had better read on. Steve Keen found business graphics has come a long way in the last three years. . .

TO BE WORTHY of consideration as a serious business graphics package these days, a newcomer must offer device independent output for both text and graphics, comprehensive chart types, 'What You See Is What You Get' screen displays – or a cheaper price to compensate.

WYSIWYG, device independent output, and to some extent speed of operation all mean the storage of images as 'vectors', rather than as bit maps, where the graphic is stored as a pixel map of the screen. In vector storage, a coloured box (the rudiments of a bar chart) will be stored in a form akin to 'Box 1,12,25,50 Fill 2', which in a mythical graphics package would mean draw a box starting 1 per cent in from the left hand corner of the output device, 12 per cent down from the top, finishing at 25 per cent and 50 per cent respectively, and filling it with blue. The program then translates that, for whatever device you wish, into a visual image.

There are myriad ways of providing that product, and deciding between a graphics package these days boils down to the quality of the interface, and the graphics manipulation features built into the program.

As in every other application area, there is a market leader: Harvard Graphics. It is not only the most popular program, it is – to date – still the best, in terms of ease of use and the quality of product.

Harvard Graphics

Harvard Graphics from Software Publishing, is one of those annoying programs which is easier to use than it is to describe. Nonetheless, its manual runs to a voluminous 350-plus well-written pages, which gives you some idea of the features it contains.

It has been my standard package for some three years now, with only The Magician getting a guernsey when a heavily annotated or automated display is called for (using its excellent built-in programming language, Obey).

A user interface should put the minimum distance between the user and the result. On this ground, Harvard Graphics' user interface is excellent. Its main menu appears as a light blue window on a dark blue background, with menu items in black and a numbered key to them in red. Items can be selected by pressing either the first letter of the item, or by pressing the associated number. A number of features – such as whether a chart is landscape or portrait orientation, and spell checking (a welcome facility!) are invoked from function keys. These are clearly labeled at the bottom of the screen.

Creating a chart

The first step in chart creation is to select a chart type. Harvard supports all but a few chart types, with the major exceptions being flow, bubble and Gantt charts (an apparent omission, the text table, is in fact handled automatically under 'Free Form Text' when your text lines up in columns).

After that, there are two ways to get data into HG: type it in directly, or import it from an ASCII, Lotus or PFS:Graph file. I rarely if ever use direct entry, though HG supports this option far better than most of its rivals. Initially it prompts you to specify the X-axis type – Day, Month, Number, whatever – and it then automatically generates the labels for you. For example, if you have monthly data collected on a three monthly basis between January 1985 and now, selecting the 'Month/Year' option, entering 'Jan 85' as the start, 'Oct 88' as the finish, and 3 as the increment, automatically produces the labels 'Jan 85, Apr 85,. . . Oct 88'. Using the full 'January' produces unabbreviated month names; using numbers (1/85) produces a numeric date format.

After that, the program displays three lines for title, subtitle and footnote, plus a mini-spreadsheet with 4 columns and 12 rows. A further 4 columns can be displayed by pressing F9, and up to 240 data points by pressing Page Down. You move about the spreadsheet using the Tab, Return and arrow keys.

Data can be calculated as well as entered directly, with a comprehensive range of statistical and charting calculations supported. @DIFF(#1) will generate the changes between each reading of the first series – useful for plotting stock movements, for example.

Press F2 at any time and you will see a default graph, which includes title lines, axis markers, labels for each series graphed, a legend, and different series display with different colours. Embellishing it beyond that bare stage is the responsibility of the function keys controlling text size, placement and colour, and the four pages of forms which lie behind the F8 key – Harvard's Options.

F7 lets you alter text size for titles, labels and body text in word charts, with a range from 0 to 100 points (including fractional points); it also controls left, right or centre alignment. F5 controls colour, and text enhancements such as bold and italic. Changing all titles, legends and axis labels from the default black to blue involves only 12 keystrokes in one operation.

The first page of the Options menu lets you give meaningful labels to your series – 'Share Price Index' rather than 'Series 1', nominate whether a series will be charted or not, and its chart type – with the Bar/Line options including Bar, Trend, Line, Curve or Point, and which of two potential Y axes to display the series against.

Page two covers 3-D style effects, whether numeric values are displayed on the chart and legend location; page three controls axis details – including the ability to display a table of the actual chart numbers beneath the graph, which is invaluable in teaching uses of the program. The final page covers colours, marker and line styles, and whether a series is cumulative or not.

You can change bar/line charts to pie or area charts by simply returning to the main menu and choosing the Create option; Harvard will keep the initial data.

The process is quick and easy. After a while, you become quite conversant with the effects you like and how they interact, so setting up a chart for maximum effect becomes routine. At that point you have three choices – go through the whole process manually, automate its using HG's memory resident MACRO program, or save a finished chart as a template, and use that template as a style guide.

Freehand design

Further embellishment is possible using the Draw/Annotate option, which gives you the ability to place freehand graphics, text or pre-designed symbols wherever you desire on a graph. HG presents you with a miniature of your finished graphic, plus a menu of add-on choices covering text, boxes, circles, lines, polygons and symbols, on a Mac-alike screen.

Adding an object, such as a curved line or arrow, involves selecting the Add option, choosing the object to add, altering its default values if necessary, and then placing the object where desired.

The available objects include over 300 quite sophisticated symbols stored in 16 files. They range from simple money and people shapes through to detailed world and regional maps, flowchart symbols, greek letters, buildings, and vehicles. In many ways this obviates the need for a freehand graphics package, and in addition your own freehand etchings and even whole charts can be saved as symbols, giving the ability to include the corporate logo on every slide, say.

Output

Harvard charts can be collected together into a slide show, either for mass reproduction of charts or for automated display using the PC itself. The program incorporates most of the features of Videoshow: fades from one graphic to another, weaving images, iris, blinds, scrolling, and so on; and charts can be overlaid where required.

Harvard drives a multitude of output devices – 40 broad printer types, 17 plotters, 12 film devices and a range of screens up to VGA standard. One real strength of the program is that all hardware can be reconfigured from within it, enabling you to change printers, on the fly. Harvard also supports the VDI standard and metafiles, which allows its graphs to be exported to desktop packages such as Ventura.

The MACRO memory resident utility is a specialised keystroke recording tool. In addition to replaying keystrokes, it allows you to incorporate user input and time delays to automate chart production by an untrained user, for example, or have charts printed overnight to avoid hogging a network printer during peak periods.

Deficiencies

One long standing deficiency is the absence of a method of moving data points and variables around (something which is partly obviated by its ability to import from an external WP or spreadsheet file). Other problems stem from Harvard's fairly rapid rate of evolution; frequently a new feature is not adequately supported by other parts of the program – for example, the newly added ability to display a table of data with a chart, displays all variables, even if you have chosen only to graph a subset of them.

The template feature, which allows you to store standard settings and establish data links with external files, does not work properly for bullet charts. A template saved as a bullet with an external ASCII file link will load as free-form text.

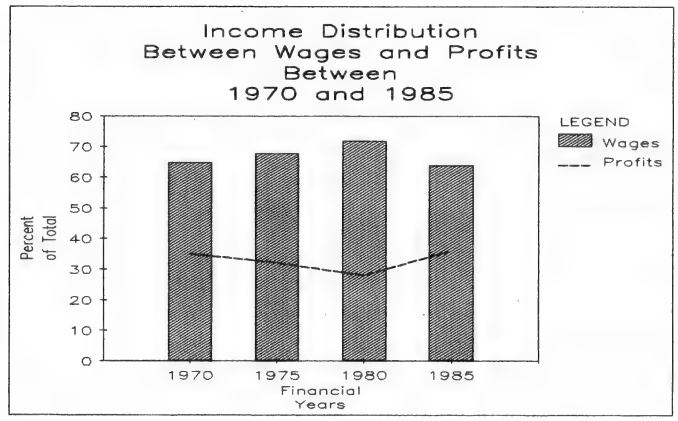


Figure 1. *Master-Chart's default bar/line graph – unfortunately, the package doesn't include a driver for the HP PaintJet; this example was produced with a laser printer.*

Conclusion

Harvard lacks the touches provided by top of the line professional packages, such as control of background/foreground colours, multi colours (rather than just 16) and textures. That aside, it is a top rate program which gives excellent results very quickly and with a minimum of fuss. HG makes graphics the one area where buying the market leader is truly a wise decision.

The 'majors'

If there is any application area where the major software houses are simply not in the race, it is graphics. Microsoft, Ashton-Tate and Lotus all have business graphics programs. Microsoft Chart alone can compete with the lesser known houses – Software Publishing Corporation (Harvard Graphics), Digital Research (Gem Graph), Zenographics (Mirage and Pixie), and the locally written Magician.

The graphics offerings from the three Prometheans of microcomputer software are all based on relatively ancient programs. They have in common poor interfaces, awkward techniques to modify the default graphs, and – GraphWriter apart – poor data entry modules. Only Microsoft Chart gives you a fully flexible charting package, beneath the awkward interface.

The Master series

Chart-Master is part of a suite of products, including Diagram- and Sign-Master. Chart-Master provides numeric charts only; Sign-Master produces textual charts, while Diagram-Master is a free-form graphics package which also produces organisation and Gantt charts. They share the same primitive menus of the 'type a number and press return' or 'point and pick' variety.

Step one, creating a chart, commences with providing title lines – up to four. Then the screen blanks, and you are asked in succession for X-axis and Y-axis labels (two lines each); the screen blanks again and prompts you for method of data entry (manual or 'datagrabber'); manual data entry requests the number of variables and readings, before prompting for variable and reading labels, and finally getting data off you, one variable and one observation at a time.

Compare this to Harvard Graphics, The Magician or Gem Graph, where you see a spreadsheet view of your data (and in Harvard, data for one variable can be calculated from the others).

Changing settings

Chartmaster supports 8 typefaces, and lets you mix and match them all on the one screen – a feature which breaches the 'KISS' rule (Keep It Simple Stupid) that underlies good graphics design.

Its method of changing typefaces, as well as print sizes and justification is relatively simple. Beneath the actual text for any part of the screen – titles, X- or Y-axis labels, footnote – is a 'window' displaying font, text size, whether italics or underline are used, justification and colour. PgDn takes you from the text to the options, which are easily changed by with the up or down arrow.

While this works OK for one line, it means that if you wish to use the same typestyle or colour on all labels on a chart, you have to individually vary at least seven lines of text – and that for a chart with only one reading of one variable. A chart with 4 variables and 10 readings would require 45 separate operations and innumerable keystrokes (compared to Harvard's one operation and maximum 12 keystrokes).

Chart types

Chart-Master offers a conventional range of 2-D graphs only. It does support multiple charts, but its method of so doing is primitive. The mixed chart settings are controlled from the second page of the 9-page options menu, and you have to nominate the chart type for each variable in numeric sequence – Chart-Master does not prompt you with the variable names.

Since viewing the chart is a menu option – rather than residing on a function key as with Harvard Graphics – you have to toggle through several menus before you can see the appearance of your chosen chart. Fine tuning thus becomes laborious, compared to Harvard's one-key view of a graph.

Chart-Master offers an annotate feature rather similar to that of Harvard, though with far fewer features. You can add text wherever you desire, and straight lines plus a number of simple symbols. However multi-point lines, curved lines and meaningful symbols are not possible and it displays in monochrome, even on a colour screen.

Diagram-Master provides more ability to design a free-form chart, but apparently it cannot edit or embellish a Chart-Master graph. Describing it is like describing a primitive version of the Annotate feature in Harvard, except that it has one or two techniques which are better. You can draw an arc in Diagram-Master by indicating its beginning and end, and then pushing out the middle using the arrow keys; Harvard requires you to indicate exterior axis points for a curve, which is more mathematically precise but harder to execute.

Data importing

The three foreign file formats that Chart-Master supports are DIF, SYLK, and ASCII. The data importing module has no support for subdirectories, so you have to copy files to the master?-chart subdirectory to use them.

Selecting data uses the end-arrow key in the same fashion as for Lotus. That's about the best of it. It is not as intelligent as HG, which can normally recognise variable names and differentiate them from readings, and selects legends and labels as well as data in one operation. Nor do you see a display of all available files; you have to type the correct file name in.

Conclusion

I'd bet 'London to a brick' that the Master series is an ancestor of Harvard Graphics. Its component pieces add up to what Harvard offers in one unit, its menu interface is very similar to the old Harvard Presentation Graphics, Diagram-Master in particular is uncannily like a first draft of Harvard's Annotate feature. Either Software Publishing Corporation bought the rights to develop the Master series, or they poached the author.

GraphWriter

Lotus can produce excellent software – the newly released Agenda is superb. But it can also produce duds, and I'm afraid GraphWriter is one of them. For example – the user interface is badly designed, the on screen display of graphics is paltry, it is slow, there is too little choice in some areas (like text sizes) and too much in others (number of fonts on the one chart, say), rigid chart types (a bar/line chart can have only one bar, not a mixture), and it lacks computational skills.

What it does have – the automatic linking of graph files to spreadsheets – is available in Harvard Graphics and several other competitors. It will probably sell a lot of copies because of the Lotus name, but that is about all it has going for it.

Aesthetically, the interface is reminiscent of mainframe menu layouts. The blue background, white entry area with black underline, and the marking of style boxes with double horizontal lines appears dated. It is well short of what the PC is capable of in text mode, let alone in graphics mode.

Functionally, the layout divorces you from the data being plotted, and encourages inconsistent chart design.

The top three lines of GraphWriter are a 1-2-3 style menu covering choosing a chart type, loading files, printing and so on, a brief help line explaining the highlighted menu option, and a status line telling you which form you are on, and prompting for action. Otherwise forms, and pop up menus attached to the different parts of forms, dominate GraphWriter's interface. The first of three forms (which itself has three sections) governs the textual components of a graph, the second legend and axis labels, the third the actual data.

To the right of each section of each form is a 'style box', which you access by tabbing across to it, and pressing the spacebar to bring up the associated pop-up menu. Style menus cover everything from the font used for headings, size, colour and alignment, and the details of the box around the heading (if any), to axis and marker styles where relevant.

This design, with a separate style menu for each component of a graph, is perhaps GraphWriter's worst feature. It means that to impose a consistent style on the entire graph (such as the colour blue for all text) you have to access and alter each of at least six separate style menus, and change up to three settings in each – again using a separate menu for each one. The keystrokes soon add up: 5 main style menu operations and 11 submenus, with one

MELBOURNE:. (03) 329 2555
FAX..... (03) 329 2279
GEELONG:..... (052) 21 8566
TOWNSVILLE: .(077) 21 1743
FAX..... (077) 72 4459
NOWRA ..... (044) 21 6913

Head Office:
Melbourne: 279 Victoria St. W. Melbourne, 3003

Geelong: Shop 3, Belchers Arcade, 171-181 Moorabool St, Geelong, 3220
Townsville: Shop 3, 134 Charters Towers Rd, Hermit Park, Townsville, 4812
Nowra: Shop 3, 144 Junction St, Nowra, 2541

MICRO BUS
COMPUTERS AUSTRALIA

SOFTWARE, HARDWARE AND PERIPHERALS FOR BUSINESSES, OFFICES, HOMES, SCHOOLS AND FACTORIES

★HARD DISKS★
20 MEG Miniscribe
30 MEG Miniscribe
40 MEG Miniscribe
INCLUDING CARD
ALSO RODIME
From $500

$ CALL - CALL - CALL $

AT's from
$2599

Features:
★ 8088-2 CPU
★ Two 360Kb Floppy Disk Drives
★ 4.77-10mHz Switchable Clock Rate
★ 640Kb RAM
★ 8 Expansion Slots
★ 180W Power Supply
★ Including **Composite Monitor**
★ 0 Wait State
★ Serial, Parallel and Games Ports

$1699

★ ACCESSORIES ★
Whitty Mouse..... $135
Joysticks from $45
Printer Stands..... $55
5¼ floppy Disk..... $15
5¼ floppy Disk Boxes $25
*Many more..... Call

XT TURBO 640K FROM
$1299
TUARA

$3945

Features:
* 80286 CPU
* 1024K RAM (Expandable to 4mb)
* 6-8-12-16mHz Switchable Clock Speed
* **44 Meg Voice Coil Hard Disk**
* Speed Display Case
* 1.2mb Floppy Disk Drive
* 360k Floppy Disk Drive
* Enhanced Keyboard
* Serial, Parallel and Games Ports
(All speeds rated at 1 Wait State)

MONITORS
. . . . . COLOUR

EGA - From $899
(with Auto Switch Card)

$ CALL - $ CALL - $ CALL - $ CALL

MPC-386 20

Features:
★ 32 BIT Motherboard
★ 2mb RAM (Expandable to 10mb)
★ 44mb Voice Coil Hard Disk
★ EGA Monitor and Card
★ 1.2mb Floppy Disk Drive
★ 360K Floppy Disk Drive
★ **Tower Case** or **Speed Display Box**
★ Enhanced Keyboard
★ 4.77-8-10-12-16-20mHz Switchable clock Speed
★ Serial, Parallel and Games Ports

$7495

AUTHORISED DEALERS FOR
★PRINTERS★
EPSONS
STAR
BROTHER
OKI

From $469
Others CALL

12 Month Factory Warranty
Established in Electronics over 14 Years

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MICRO-EDUCATIONAL PTY LTD

Unit 8 235 Darby St, Cooks Hill NSW 2300 Phone (049) 264122 Fax (049) 262194

DISKS

$1

5.25" DSDD. Prices slashed on lifetime warranty, US made by Wabash Datatech. Micro-Educational disks are the best quality disks available in Australia.

3.5" DSDD

$2.75

Lifetime warranty, Wabash Datatech. Suit most 3.5 drives. Normally $4.75!

BULK PRICES: 5.25 100+: $0.95, 200+: $0.90, 500+: $0.85, 1000+: $0.80
3.5 100+: $2.70, 200+: $2.65

Buy Direct... with Confidence

Micro-Educational is Australia's largest direct-marketer of computer products with sales exceeding $5,000,000 and a customer base of 39,000 computer owners.

Look at what we offer:

**** Australia's largest computer mailorder co.***
**** 10 years in business***
**** $5,000,000+ annual sales***
**** Lowest prices***
**** Reliable overnight delivery***
**** 10 day money back warranty***
**** 6 to 12 mths service warranties***
**** Nationally recognised brands***
**** Top quality products***
**** Phone, mail, Fax and Viatel ordering***
**** Intelligent advice and assistance***
**** And best of all:***
We treat you like a
Friend-of-the-Family!

If you have yet to experience our mail/phone order service why not give us a try. Our customers include most High Schools, all Universities and IAE's, Telecom, CSIRO, most of the big 8 accountancy firms, local councils, hospitals, libraries, Dept Agriculture, Dept Navy, PM's Dept as well as 30,000 private customers. This year we will ship in excess of 50,000 parcels and 250,000 newsletters.

How to Order:

a) **By Mail**: Fill in the enclosed order form and post in the enclosed reply-paid envelope. Your order should arrive within 2 to 4 days.
b) **By FAX**: (049) 26 2194
c) **By Phone**: Credit card order hotline (008)025229. All other orders or enquiries on (049) 26 4122.
d) **By Viatel**: When on Viatel access node *49001#

Guarantee

If you are not completely happy with any product (except software which carries manufacturer's replacement warranty only) then **mail** it back within 10 days for a full **10 day money back refund**. Refund excludes freight either way. All hardware carries a minimum 6 mths full service & parts guarantee (exclusive of freight either way).

MICRO-EDUCATIONAL PTY LTD

Unit 8, 235 Darby St, Cooks Hill NSW 2300 Phone (049) 264122 Fax (049) 262194

NOW!

All other modems are obsolete.

Announcing Maestro 2400 ZXR

The first 2400 Baud intelligent modem under $800. Half that price in fact. This is a revolutionary modem with features unmatched by modems costing four times the price. The performance of the Maestro 2400 ZXR is superior to any 2400 Baud modem currently on the market.

Features:

* V21, V22, V23 and V22bis CCITT and BELL
* Auto-answer, auto-dial, auto-disconnect, auto baud rate sense
* Pulse and Tone dialling * Call progress monitoring
* Optional 8K battery backed RAM expandable to 32K with unlimited access (Superior to limited access non-volatile RAM) * Forth on board
* Local and/or remote test capability
* Full Hayes AT 2400 compatability with over 40 registers
* Australian designed and manufactured with 6 mths full warranty
* Uses lightning fast ZILOG 20 MHz Super 8 uP Z088020 which outperforms all existing 2400 Bd modem microprocessors
* And best of all is the price:

2400 Baud for $399.

Now you can halve your communications cost.

The Maestro 2400 ZXR has **EVERYTHING** you could want in a modem for home or small business use. It effectively renders obsolete all existing modems. Why would you buy any other modem?

Don't be fooled by the price. Maestro deliberately set about to create a modem that would capture the lion's share of the market and with their aggressive pricing and high volume production they should achieve their goal. Already, and the modem has been on the market for a fortnight, they have received orders for 1000 units from a government department, and 500 units from a corporate client. This is an unprecedented response and recognises the remarkable value for money and features of this modem.

If you would like to double your communications speed best ring now and order your modem. If you wait you may be joining a long queue!

ORDER FORM

Dear George,

Please rush me the following: _____

_____

_____

Enclosed please find cheque/ Purchase order/ Bankcard/ M/C / VISA # _____

for $_____(Remember to add $4 post or $8 courier.)

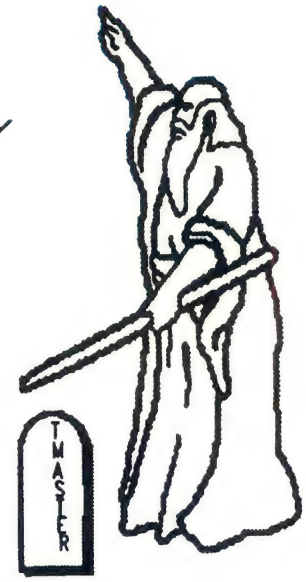
NAME: _____

ADDRESS: _____

IMAGINE

What TO-MORROWS Software will be like.

It's Simple To Use
It's Simple to Learn
It's Available Today



DO YOU WANT TO WRITE LETTERS, A THESIS, OR JUST A SCHOOL PROJECT, THEN PROOF READ THE DOCUMENT FOR SPELLING ERRORS OR TYPO'S? IF YOU ARE ARTISTICALLY INCLINED, THERE ARE ALSO SOME DESKTOP PUBLISHING FEATURES, IMPORTING OF PICTURE IMAGES, DECORATIVE BORDERS, SHADOW AND FILL BACKGROUNDS MULTICOLUMN FORMAT.

FOR PEOPLE WHO LIKE PLAYING WITH FIGURES, YOU HAVE A FULLY INTEGRATED SPREADSHEET FOR FORECASTING, JOB COSTING, BILL OF MATERIALS, OR ANY MATHS BASED PROJECT YOU COULD DESIRE. ALSO INTEGRATED IS A CHARTING FACILITY ALLOWING YOU CREATE PIE, BAR, RADAR CHARTS, TAKEN FROM YOUR SPREADSHEET RESULTS.

YOU MAY ALSO USE THE BUILT-IN DATABASE TO MERGE NAMES AND ADDRESSES FROM YOUR INTERNAL FILING CABINET INTO LETTERS AND FILES FOR GROUP MAILING, THESE CAN BE SORTED BY ANY GROUPING. eg. POST CODE, PROFESSION, AGE, HOBBIES, PURCHASES ETC. 'THE DATABASE' NOW THATS SOMETHING SPECIAL, ANYBODY WITH PREVIOUS EXPERIENCE KNOWS THAT IT CAN TAKE HOURS, DAYS, WEEKS, TO GET A WORKING RESULT FROM MOST DATABASES, WOULD YOU BELIEVE FIVE MINUTES TO GET A FULL WORKING RESULT WITH OUR NEW AUTOBUILD PROGRAM.

THERE ARE SO MANY OTHER FEATURES, SO RING (02)938-2522 TO ORDER YOUR OWN PAGKAGE OF SOFTWARE SOLUTIONS AT THE SPECIAL PRICE OF $650.

BY THE WAY THE NAME IS T/Master AND TO QUALIFY FOR THIS OFFER YOU MUST BE BETWEEN THE AGES OF 8 TO 80 AND OWN AN IBM OR CLONE PC COMPUTER.

PS: THIS SOFTWARE ALONE JUSTIFIES YOUR BUYING THAT COMPUTER AND YOU WILL JOIN THE OTHER 150000 "VERY SATISFIED" USERS.
PPS: DEMONSTRATION DISC IS AVAILABLE, AND QUARTERLY USERS GROUP MAGAZINE IS AVAILABLE TO FURTHER EXTEND YOUR ADVENTURES INTO T/Master

TCF COMPUTER SYSTEMS PTY LTD

Inc. THE COMPUTER FACTORY PTY LTD

214 HARBORD ROAD BROOKVALE PO BOX 198 BROOKVALE 2100
PHONE: (02) 938-2522 938-2135 FAX: (02) 938-4287

QuickBASIC DOES DATABASE!

db/LIB™

db/LIB™ gives your Microsoft QuickBASIC programs genuine Relational Database capability... by managing standard dBASE III+ files.

★

Three libraries of application-building data management routines access standard Database, Index, and Memo Text files and perform essential program control operations from programs you write in QuickBASIC.

★

Linking db/LIB's standard data management routines to your QuickBASIC programs will immediately raise the professional level of your program development effort, even for the most difficult database management challenges.

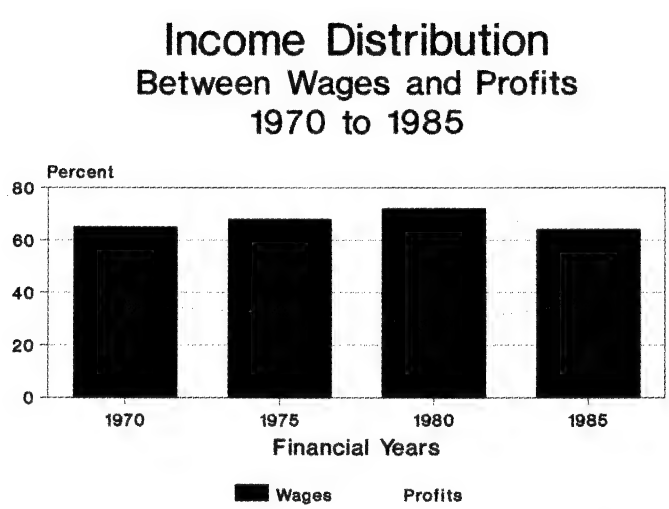


Figure 2. The default bar/line chart from Harvard Graphics – notice the 'high quality' font and the different colours for different series. (Unless otherwise noted, the charts accompanying this article were produced on a Hewlett Packard PaintJet.)

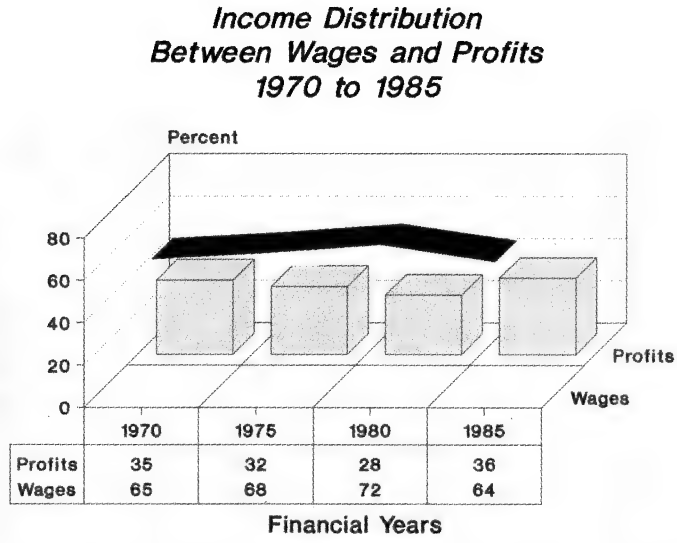


Figure 3. A Harvard Graph using the 3-D, Cluster and Table options with coloured and italicised text.

extra submenu operation for each variable. It takes 10 keystrokes just to make the top three text lines of a chart blue; that same number of keystrokes would make all headings, subheadings and footnotes blue within Harvard Graphics.

Data entry

Form 3 controls the actual data points you intend plotting. If you were entering monthly data for 3 years of sales, for example, your data points might range from July 87 to June 90. The style sheets cover the type of line and marker.

When loaded, GraphWriter expects a line chart with one series and one data point. If you want to chart 3 series and 200 data points, you have to tell GraphWriter. Form three is then redrawn to give you a 3 column by 200 row mini-spreadsheet, with the name of each series heading its column, and the legend for each data point (months of the year if you are plotting seasonal data) beside the rows.

While this is better than some graphics packages, which force you to enter one variable at a time, it is more complicated than the automatic spreadsheet approach of the likes of Harvard Graphics, The Magician and Gem Graph

Charts

Once your data is entered, it's time to choose a chart type. GW supports 10 broad chart types (including the non-standard bubble, Gantt and table graphs) in 24 configurations; you select your desired type from the main menu.

While GW's approach makes it fairly easy to try different chart types with the same data, it doesn't allow for the multiple combinations of chart types that are possible under Harvard, where you can nominate any of 5 chart types for each variable. A combined bar/line/area chart in true 3-D is a snack to design in Harvard; it is impossible in GW.

Worse, the most common multiple chart type, a mixed bar/line, is rigidly defined. Only the first variable can be a bar; all the rest must be lines. Harvard, The Magician, Pixie and Mirage all let you pick any combination of bars and lines that you desire.

You can choose from any of eight fonts (which also include variations such as boldface and italic) for any text on a graph, with the same degree of difficulty as for changing colours. Ditto for text size, but here GW's rigidity sets in. There are only 5 text sizes from which to choose, from 'tiny' to 'extra large'. Numerous competitors are up with today's PostScript world, and let you choose any point size you desire, from 0.1 to 100.

Freehand embellishments aren't possible; to add symbols and the like, you have to merge a Freelance graphic into GW. Again, several competitors, notably Harvard, Pixie and the Magician, allow easy freehand and symbol modifications to charts (Gem Chart comes as part of the Gem Presentation suite, which includes a freehand package. With Lotus, you have to buy Freelance separately).

Previewing

You can preview a graph from within GraphWriter, by choosing Plot Preview from the top line menu or pressing F9. What you see is a crude graph, with all text in a stick letter font.

The manuals' explanation for this tardy representation of the eventual printed output is that 'GraphWriter uses a simplified font for previewing. By doing so, your charts are displayed quickly.'

On an 8 MHz AT, GraphWriter took 12.3 seconds to first compose and display a graph with three series and a dozen data points, using data which had already been loaded from disk (even on my 16 MHz Toshiba 386, a plot took over 10 seconds). Subsequent reproductions took 4.2 seconds.

One feature of GW's default graph which I can laud is that if your labels are too long to enter horizontally, GW automatically angles them to the extent necessary to display them properly. Of all the other packages I'm acquainted with, only Mirage and Microsoft Chart offer this feature.

The Amazing ...

MAESTRO

2400ZXR

Telecom Approved

2400 B.P.S. FULL DUPLEX MODEM

$399.00 Retail Incl. Tax

Money Back Guarantee If Not Completely Satisfied Within 14 Days

As Used by -

- Hewlett Packard
- AWA Nortel
- University of Sydney
- Monash University
- Australia Post
- Telecom Australia

Uses the Latest Technology D.S.P. Chip-set with Performance Equal to or Better than Modems Costing ***$1600.00*** or **More!**

Automatic Everything

Auto-Answer, Auto-Dial, Call Progress Monitoring, Pulse / Tone Dialling, Line Condition Monitoring, Hayes Compatible.

V.21, V.22, V.22bis, V.23 (300/300, 1200/75, 75/1200, 1200/1200, 2400/2400)

V.23 with automatic bit rate converter

Do any of our competitors offer a money back guarantee?

An often asked question by prospective modem purchasers ... "Why is the Maestro modem so inexpensive compared to its competitors?" *Answer from Maestro ...* "Why are other modems so expensive? If you can buy a video recorder for as little as $499, with all its intricate mechanical and electrical parts, surely something as simple as a modem should be cheaper."

The high demand for the Maestro modems has caused some delays in delivery and placed a heavy burden on our assembly lines. However, all modems still go through an eight hour soak-test to ensure reliability.

Important Points:

- easy access to the Maestro Design Team by telephone (no piped music in your ear while you wait half an hour for attention)
- customised ROMs for little or no charge
- 32K of ROM (standard) allows plenty of space for enhancements
- 8 - 32K of battery backed RAM (optional), 8K standard
- 6 months warranty
- out of warranty typical service charge $35 (compare that with $250 from some of our competitors)
- 2 separate assembly teams and the purchasing of 1000s of components is bringing our supply time back to overnight delivery
- large dialling menu for often used numbers (requires battery backed option)
- security ring back

Many more features are being added (upgrades available for $20)

Model 2400XR

$369.00 Incl. Tax

V.22, V.22bis

Bell 103, 212, 2400

Telecom Approved

Features - *Automatic Everything* and

- Hayes 2400 "AT" command set compatible
- 27 "S" registers
- Extensive self-testing
- Non volatile RAM
- Call progress monitoring
- Uses the latest technology DSP chip-set
- Asnychronous / synchronous

NOVIX Super Computer

"The mind boggling power of this board still amazes me. Imagine having all the power of a Dec Vax 11/780 computer, sitting in your hand and being capable of running from a nicad battery. The future is here with us today using the power of the NC series uP chips." Roy Hill "Your Computer," Feb '88

4 MIPS **$699** kit form **$950** assembled

1200 Bit Stream Flyer

$199.00

- Manual dial
- Manual answer
- V.22, Bell 212

Undoubtedly the cheapest 1200/1200 bps V.22 modem in Australia

MAESTRO Pty Ltd

Calool Street, South Kincumber 2256

Phone Your Order NOW (043) 682 277, 682 278 All Major Credit Cards Accepted

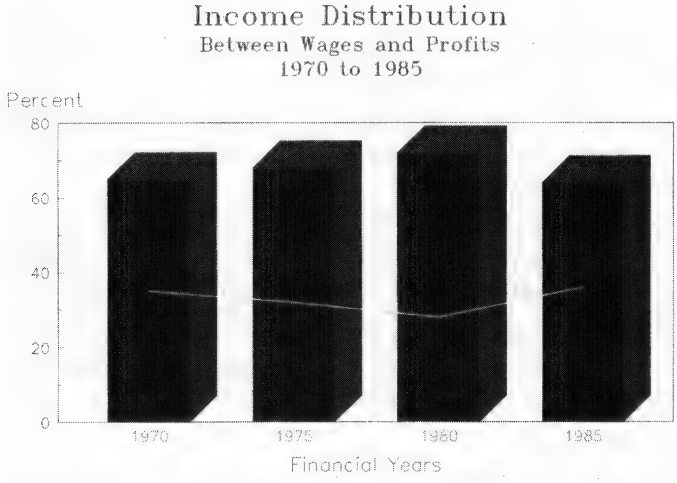


Figure 4. An embellished GraphWriter chart – note that the default printout is in black only; even for previewing, colour must be added manually.

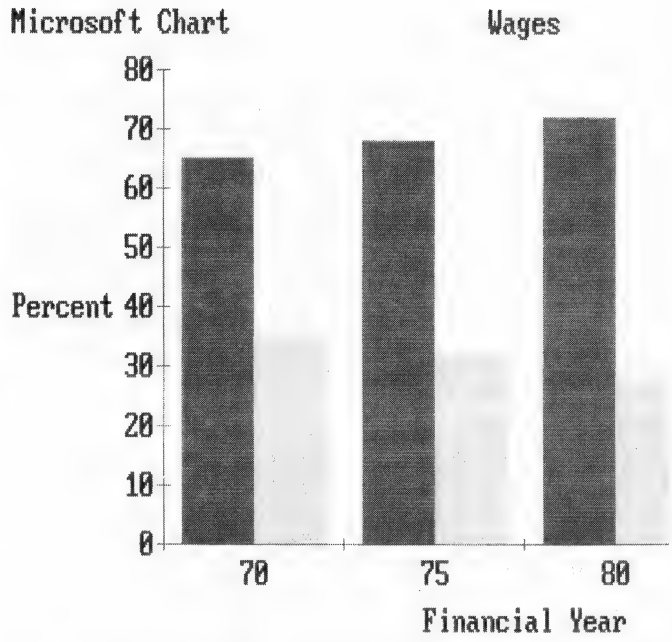


Figure 5. The default Chart graph. Note the bit-mapped text and different colours for different series.

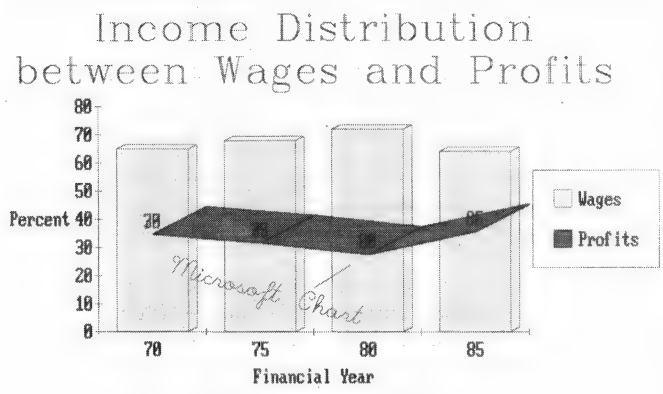


Figure 6. An enhanced Chart graph.

Automation

GW has a useful method of linking a chart to different source files, including lotus worksheets, dbase files, DIF and SYLK formats, and ASCII. It is one of a number of packages which offer this 'unique' feature (Harvard, Davrelle, Mirage, Pixie, and Chart, to mention five; only Harvard doesn't make a big song and dance about it).

Its implementation is better than most. For example, when you link a 1-2-3 sheet to a chart, GW provides the relevant range names from the spreadsheet for you on a pop-up menu. You can also view the actual spreadsheet, and mark the required ranges.

The Autocharts menu option covers design of multiple graphs on a page, as well as the printing of a series of graphs. It is comparable to Harvard's Slide Show, though it lacks the display features of that program or The Magician (using Obey). It is useful for batch printing, but certainly could not be used for a business presentation.

Conclusion

Despite being a relatively new package, GraphWriter is based on an old and outdated concept. There are many packages with superior ergonomics, better screen display, more features, and higher speed of operation.

Microsoft Chart

Chart's manual has had quite a facelift since my last review, and now look much like that of Excel. Unfortunately the program is still the Chart of old, with the Multiplan style interface (which predates the IBM PC).

Its deficiencies don't end with the menu. For example, it does not use a spreadsheet for data entry, but makes you enter data for one variable at a time. Another example: two series plotted on the one chart almost always refer to the same categories – sales by month, expenses by month. Chart doesn't presume so – you have to tell it that both series refer to the same category.

This quirk would make sense if it were a prelude to creating a graph with two Y-axes – for example one axis charting share price, the other charting annual profit. But it isn't: you create such a chart by overlaying one on another. The different categories are in fact used when designing multiple plots on the one screen, something which other programs, such as Harvard and The Magician, handle much more simply.

However, despite its quirks, Chart is a powerful package, easily the best from the software majors. While it might take time to master, it does give you the ability to create any manner of chart.

Interface

Chart's interface consists of three screens – Entry for data entry, List for adding variables to a chart, Chart for actually seeing the graphic – each with a separate menu, with most menu

items having forms attached, some of which have 12 options to fill out. Overall, it is a hurdle you must overcome before you can make use of the program beneath it.

Much of your graphic design is done with the Chart screen and its WYSIWYG image of the current graph(s). Chart regards a graph as having five different 'objects', and the arrow keys are used to indicate which of these regions the currently highlighted menu option will refer to: legend, axis, data, label, or the entire chart. So to change the font for the graph title, you have to first select that object using the arrow keys, then choose the desired menu item (Format, then Font) using the space bar or alphabetic keys, fill out the form options, and finally press return to execute.

The one part of Chart's interface which simplifies things is the Gallery: an art gallery display of standard graph types. Choosing one of these applies its chart type to your data.

Default settings

Charts' default settings are superior to those of GraphWriter. Nonetheless some of them are frustrating. For example, if you are plotting two or more variables, Chart uses the name of the first variable as the name of the Chart. My mythical chart of Income distribution was therefore initially named 'Wages'. I had to navigate to the Label Object using the down arrow key, select the Chart Label using the sideways arrow keys, and finally edit it to read 'Distribution of Income' with the Alpha command.

Step one of learning to 'think Microsoft' is Chart's data entry module. The most appealing way to enter data for a graph package is to follow the spreadsheet model: enter data in a rectangle of columns and rows, provide the variable names along one axis and the values along another, select your graph types and you're away. This is the approach taken by Gem Graph, and to some extent The Magician and Harvard Graphics.

Microsoft could have used the row and column pointing elements of Multiplan to build the data entry module for Chart. Instead, they have written a module which allows you to input the values for only one variable at a time: it's like a one-column spreadsheet. You cannot check entries across variables visually on screen, and you have to repeat the same data entry commands for each variable. It is, like many other aspects of the package, quite cumbersome.

Charts can also be linked to data in spreadsheet and database programs, with the Chart automatically updated when the source datafile is edited. However, if you use Lotus range names for your data, Chart converts these to absolute cell references – so if you expand the data in your graph, Chart will ignore it. This makes it a relatively weak 'automation' feature.

Features

Chart supports a wide range of graph types, and allows any sensible combination of graph types on the one chart. You can create and display as many as 1024 graphs on screen at one time in 16 separate windows, and print them out on the one page, while one chart can have many different graph types mixed on it. The easiest way to do the latter is to select a mixed Chart from the Gallery.

Text charts use the free-form text entry feature; while this isn't as easy as simply defining a text chart within Harvard, there are features built in which make it possible to design quite effective charts – such as the ability to add bullets, to format text within the chart as a whole, or to align text with other text entries.

Chart is flexible. Once you can navigate your way around the menus, you can relocate legends, alter borders, change patterns and colours, space bars widely or closely, angle text, change the bases of axes, and so on. However standard chart details such as multiple line titles and footnotes, which are built in to other packages, have to be handled in Chart using the free-form text option.

This release of Chart drastically increases the number of data points that can be plotted, from 128 to 8,000 per variable. It is the only package from the big three which could be used for serious scientific plotting.

The ability to plot numerous data points is supported by a set of mathematical functions which compare with those in Harvard Graphics. It supports the likes of simple cumulation, averages, and addition/multiplication of separate series, four types of regression curve fitting, trigonometric transformations, and so on. Chart also produces statistical summaries (mean, standard deviation, R squares coefficients) when a statistical operation is requested, making it a surrogate statistics package.

Conclusion

Chart's limitations stem mainly from its complicated interface, and the poor data entry module. Chart has the upper hand for scientific work, given its large number of data points (8,000 versus 240) and its statistical functions. But Harvard wins easily on ease of use, the range of charts supported, and the ability to annotate. If Chart used the Windows interface, it might be a different matter.

The base line . . .

So that's the base line. Harvard from Software Publishing Corporation is the deserved market leader. Of the majors, only Microsoft has a package which is worth considering, and only when your data involves more than 240 readings. But Harvard has a number of competitors from other software houses – several of which use more sophisticated interfaces – I'll cover them next time. □

Product Details

Product: Harvard Graphics from Software Publishing Corp.
Distributor: Imagineering,
77 Dunning Ave, Rosebery 20125 NSW; (02) 697 8666
Price: $799 taxed

Product: Chart-Master series from Ashton-Tate
Distributor: Tech Pacific,
Unit 1, 5-15 Epsom Rd, Rosebery 2018
NSW; (02) 697 7111
Price: $652.80 taxed

Product: GraphWriter from Lotus
Distributor: Imagineering,
77 Dunning Ave, Rosebery 2015 NSW;
(02) 697 8666
Price: $970 taxed

Product: Chart from Microsoft
Distributor: MicroAustralia,
15 McDonald St, Mortlake 2137 NSW;
(02) 736 3299
Price: $562 taxed

If you're self-employed or run your own business, Lewis CROSS-CHEQUE will help keep your accounts in order.

Join the 800 other businesses who are using CROSS-CHEQUE to keep track of their income and expenditure.

To help in preparing your tax return, CROSS-CHEQUE prints reports detailing each income and expense category.

You simply enter details directly from cheque butts or deposit slips. Any cheque can be split across several expense accounts. Handles 120 categories of income and expenditure. Allows you to do bank reconciliation.

The latest version of this popular package has dozens of new features, including:

- A new report listing the month-by-month values of each income and expenditure category.
- Abbreviations for regular payees.
- Much more comment space for cheques and deposits.
- Summary reports can be written to a disk file.
- General Ledger Code number.
- Unpresented cheques automatically brought forward for new financial year.

"If ever there was a small software accounting system that could be described as ideal for the very small business, Lewis CROSS-CHEQUE would fit the bill." Dan Lawrence, Your Computer, August 1986.

CUSTOM-MADE SOFTWARE (SALES) PTY LTD
P.O. Box 507,
Randwick NSW 2031
Tel. (02) 399-8566

Dr Geoffrey Lewis. *In 1965 he was selected by IBM to demonstrate the new System 360. He was selected following a sensational score of 150 out of 120 in a university test for mathematical aptitude. He was awarded the extra points for exceptional problem solving ability and in the next ten years nobody else got more than 75 marks. He has applied his problem solving ability in producing four software packages written for Australian conditions.*

Lewis LETTER MAGIC

Most wordprocessors let you do all forms of word processing: letters, articles, books, price lists, footnotes and computer programs. They become top-heavy with features and hard to operate.

LETTER MAGIC concentrates on only one application, the very important one of writing letters. Your letter automatically starts with the date, name and address of the person you are writing to. Standard letters, paragraphs or phrases are easy to do. Sign-off your letter with one key-stroke.

LETTER MAGIC has a database for names, addresses and other information. You can send the same letter to many names. You can produce address labels, telephone lists, fees due notices.

"If your primary need for a wordprocessor is letter writing, then Letter Magic is worth your attention, regardless of the word processor you are currently using." Ewart Stronach, Your Computer, December 1987.

DEMO PACKS

Demo packs, which contain the manual and complete program are available at only a fraction of the price. Not just a fancy scrolling display with impressive graphics but the real program. Actually test it out on your own computer! If you like the program you pay the balance of the price.

The programs are available for MS/DOS. Available for Macintosh except LETTER MAGIC.

50,000 employees are now being paid using the Lewis PAY-PACK payroll package.

PAY-PACK does all aspects of your pay processing: pay slips, tax calculations, holiday and sick accruals, management reports, group certificates. PAY-PACK is used by over 550 firms, ranging in size from companies with three employees through to BHP.

Over fifty new features have been added to PAY-PACK in Version 4, including:

- Employer Superannuation Contributions;
- Holiday records in days or hours;
- Rostered Day Off accruals;
- Tax averaging for sales commissions.

There are also extra options for:

- Direct entry of bank deposits ($300);
- Labour Job Costing ($990).

HOT-LINE SERVICE

We offer telephone assistance daytime, evening and weekends. We know that a payroll question on pay day must be answered urgently.

Lewis CASH FLOW

For personal use or for business use.

You enter details of your future transactions for receipts and payments. Specify whether the transaction is one-off or recurs every so many weeks or months. Starting with your account balances, CASH FLOW gives your cash position at any point in the future. This helps you make financial decisions, e.g. when to shift funds between cheque and savings accounts.

Name: .....

Address: .....

.....

Phone: ..... Computer: .....

	Pay-Pack ☐	Cross-Cheque ☐	Cash Flow ☐	Letter Magic ☐
Send more info.				
Send demo. pack	$60 ☐	$36 ☐	$36 ☐	$36 ☐
Send full system	$990 ☐	$390 ☐	$150 ☐	$490 ☐

All prices include sales tax. If paying by Bankcard or Mastercard, include card name, number, expiry date and signature.

WIN A PRESID MULTI-FON PRINTER AND MOD

VALUED AT OVER $4000!

Subscribe to Your Computer for 1 year (12 issues) or 2 years (24 issues) and you have a chance at winning this fabulous PC outfit.

Your Computer provides friendly informal advice on technical subjects in a comprehensive manner. It's a must for everyone with a personal computer, whether in the office or at home.

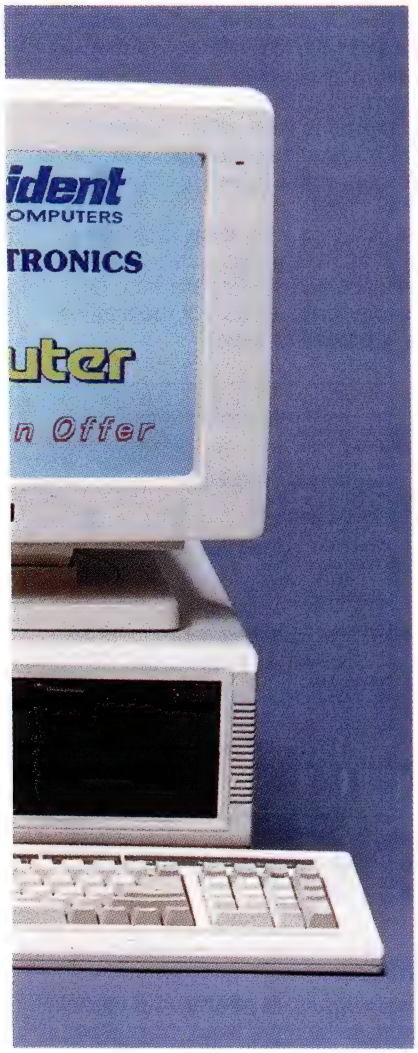
A 12-month subscription only $45!

CONDITIONS OF ENTRY

1. The competition is open only to Australian Residents authorising a new/renewal subscription before last mail 30 January, 1989. Entries received after closing date will not be included. Employees of the Federal Publishing Company, President, Star Micronics, Banksia Information Technology Ltd, Hayes Micro computer Products Inc, Freeway Communications and their families are not eligible to enter. To be valid for drawing, subscription must be signed against a nominated valid credit card, or, if paid by cheque, cleared for payment.
2. South Australian residents need not purchase a subscription to enter, but many enter only once by submitting their name, address, and a hand-draw facsimilie of the subscription coupon to The Federal Publishing Company, PO Box 227, Waterloo, NSW 2017.
3. Prizes are not transferrable or exchangeable and may not be converted to cash.
4. The judges decisioin is final and no correspondence will be entered in to.
5. Description of the competition and instructions on how to enter form a part of the competition conditions.
6. The competition commences on October 31, 1988 and closes with last mail on January 30, 1989. The draw will take place in Sydney on January 31, 1989 and the winner will be notified by telephone and letter. The winner will also be announced in The Australian on February 2, 1989 and a later issue of this magazine.
7. The prize is: A President PC 88C University valued at $3100, Star printer NX1000CL valued at $619, Bit Blitzer modem 121 value $299, Freeway Communications software valued at $168.
8. The promoter is The Federal Publishing Company, 180 Bourke Road, Alexandria, NSW 2015. Permit No TC/88/2967 issued under the Lotteries and Art Unions Act 1901; Raffles and Bingo Permits Board Permit No 88/1756 issued on 28/9/88; ACT Permit No TP88/1022 issued under the Lotteries Ordinance, 1964.

ENT PC WITH T COLOUR BIT BLITZER EM

RECEIVE A FREE BRASS PAPERWEIGHT TOOL KIT!



President Computers PC 88C

This new generation, compact Personal Computer (with a colour monitor!) comes complete with twin floppy drives, a fast 20 Megabyte hard disk, 640 Kilobyte RAM, three switchable processing speeds at 0 wait state, one serial and one games port, four 8-bit expansion slots, and a programmable speaker — all driven by a 16-bit 8088-10 microprocessor. Bundled with the machine are DOS 3.2, GWBasic and a range of President software: Writer (a full-featured word processor that includes mail merge), Calc (a powerful spreadsheet featuring multiple split screens) and Diary Planner. Total value of PC & software $3,100.

Star Micronics Printer NX-1000CL from Hypec Electronics

An advanced 9-pin, dot matrix printer that can produce seven colours! Additional features include a wide variety of fonts and printing styles, a colour code command language, and even paper parking, valued at $619!

The Bit Blitzer Modem 121 from Hypec Electronics

An internal modem offering full duplex communications at 1200 and 300 bps complete with auto-dial and auto-answer. Hypec are also including with this fully-tested unit a menu-driven communications package with a powerful script facility: Freeway Advanced. The software supports most popular transfer protocols and features Crosstalk emulation and Autopilot. Total value $467.

SUBSCRIBE NOW AND RECEIVE THIS HANDSOME PAPERWEIGHT/TOOL KIT FREE!

By subscribing now you'll automatically receive one of these intriguing solid brass paperweights — which is also a handy 5-in-1 toolkit! Outside it's a hammer, but inside the handle there are four screwdrivers (two flat blades, two Phillips). Normal retail value $14.95!

HURRY! OFFER ENDS JANUARY 30th, 1989

To subscribe simply fill out the coupon attached — or if missing, send name, address, phone number and cheque, money order or credit details (card type, card, number, expiry date and signature) to Federal Publishing Company, Your Computer Subscriptions, Freepost No. 4, P.O. Box 227, Waterloo, N.S.W. 2017. Enquiries can be made by phoning 693-9515 or 693-9517.

Database Data

In the fourth part of our database survey, Steve Keen takes on three direct contenders of dBase – Paradox, Focus and DataEase (but which is the winner?).

HERE ARE three direct contenders with dBase – Paradox, Focus, and DataEase. (They are far from the only three; some contenders not reviewed thus far include Revelation, Dataflex, Meta5, Double Helix 2, Informix SQL, Omnis, Oracle Unidata, Clarion, Data Perfect, Filepro 16. When we get our breath back, we'll put them under the microscope.) Cosmetically these three are quite different programs. What they all have in common is an attempt to simplify the linking of multiple files, compared to the dBase method.

To relate customer, product and invoice records in dBase, you have to have common fields in all files, and create matching indexes with them. If you use customer and product numbers, your invoice file must have both a customer and a product number field, and be indexed on both. You keep the records in step by using a SET RELATION TO command, which ensures that when you have the personal record for customer ZWT849 on screen, the first invoice for that customer is the current record in the invoice database.

To go beyond that, and, for example, print all invoices for ZWT849 (with his or her name replacing the code, and product names replacing product codes) requires dBase programming, using either the SET FILTER TO command to select only that customer's invoices, or more complicated DO WHILE commands; either way, there's plenty of SELECTing of the three databases.

Paradox

Since being taken on by Borland, Paradox has been revamped and released in two modes: Paradox 2, the stock-standard DOS product; and Paradox 386, designed to take advantage of the memory accessing of the 386 processor, which gives near spreadsheet speeds in Browse mode.

Paradox's user interface clones Lotus 1-2-3, with a top line menu (and function keys for several frequently used options), a second line showing sub-menus for each main menu choice, with the current database table taking up the remainder of the screen.

Unlike 1-2-3, Paradox can store multiple tables at once, and moving between them is a simple matter of pressing F3 or F4. Compare this to dBase, where moving between databases requires a SELECT command, followed by BROWSE or the like if you actually want to see the data.

I imported four files from a dBase application into Paradox, with 51 records in the smallest file and 1400 in the largest. Importing took mere seconds, while swapping between databases was instantaneous, as was scrolling through each one.

The default Paradox display is the table view, which is akin to dBase's Browse view. Each record takes one screen line, and if a record is more than a line long you can scroll sideways across the various fields using the arrow or tab keys.

A press of a function key takes you to a form view, displaying one record at a time in complete detail. Paradox automatically creates a default form the first time you access the form view, but you can also design multiple custom forms to access the single database, with each form suiting a particular usage.

ORGAN	Acronym	Company
1	AAB	Australian Associated Brewers
2	ABC	Australian Broadcasting Commission
3	ABEU	Australian Bank Employees Union
4	ABTEF	Australian Boot Trade Employees Federation
5	ACIC	Australian Chemical Industry Council
6	ACM	Australian Chamber of Manufacturers
7	ACNIELSEN	A.C. Nielsen
8	ACOA	Administrative and Clerical Officers' Association
9	ACS	Australian Customs Service
10	ACTU	Australian Council of Trade Unions
11	ADC	Australian Dairy Corporation
12	ADCOA	
13	ADSTE	Association of Draughting, Supervisory and Technical Emp
14	AFA	
15	AFCC	Australian Federation of Construction Contractors
16	AFR	Australian Financial Review
17	AFULE	Australian Federated Union of Locomotive Enginemen
18	AGE	The Age
19	AIA	Automotive Industry Authority
20	AIMPE	Australian Institute of Marine and Power Engineers
21	AJA	Australian Journalists Association
22	AMC	Australian Manufacturing Council

Figure 1. *The default Paradox display is the Table View which is akin to dBase's Browse. The Tab or Arrow keys are used to scroll sideways if the record is more than one screen wide.*

Datumbases

For those who'd like to know more about databases – in July, we covered four low-priced offerings: Memory Mate, Q&A, Reflex and Dac Easy Base; our August issue had Enable, Open Access, Smart and Ability Plus – all part of integrated suites – and RapidFile, a single file database, and AskSam (a database with a difference). October included two dBase clones, VP Info and DBXL, and a database add-in for Lotus 1-2-3, Silverado. Back issues are available: refer to the Services page.

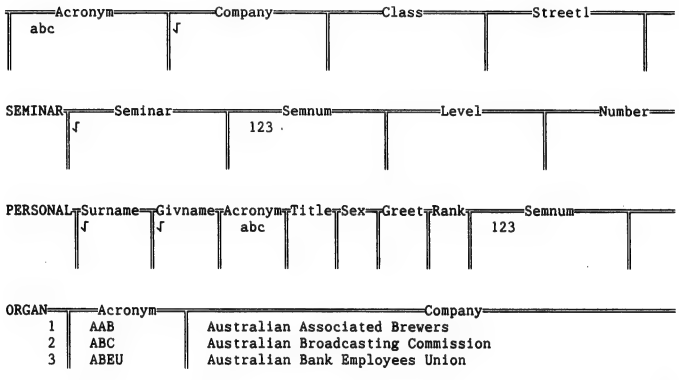


Figure 2. *The design of a multiple query is quite easy with Paradox – after selecting Ask from the main menu and choosing a file, a blank table from that database is shown. Fields to be reported are selected with F6 (which gives the 'checkmark'). Entering a value into the field restricts the records to only those with that value, which can be either alpha or numeric.*

Linking multiple files

Paradox has several features which simplify the linking of files; unfortunately those same features limit other aspects of the program in a manner which hobbles the program's relational powers.

When in Edit mode, you can define a validity check for field entries which requires Paradox to only entries in one field which match those in another database (like the 'must match' fields of Open Access).

Let's say you have used Paradox to design an invoicing system, and you want entries for customer number checked against the customer database. So you use the ValCheck/TableLookup option to require that the invoice entry for customer number already exists in the customer database, and that all other customer information – name, address – is grabbed from that file. So far so good.

But let's say you'd also like to have the customer database appear in name order, for those customers who can't remember their number. Obviously many customers are going to have the same last (and first) names, so you make surname, firstname and address key fields in the customer database.

Catch-22 strikes, Paradox style. The TableLookup function requires that the consulted database be keyed only on the first field – in other words, it requires a single, unique field to consult. So you can't combine relational lookups and multiple indexes.

The only solution is a workaround: have a unique numeric code in every database, and use that for linking. This brings up Catch-22, part 2. Paradox indexes work on the first field in a database; so do Paradox table lookups. So your databases can then be in order of the numeric key, but never in order of the substantive fields – customer name, product name and so on. To find those, you'll have to use the Zoom function to search for desired values.

All in all, this aspect of Paradox is a true parson's egg. It does what dBase cannot: enable you to define multiple file links from a menu system, and for that alone it stands above dBase for novice and advanced users alike. But, it forces a particular data structure upon you, making the program far more idiosyncratic to use than it should be. (Another way around this problem is the MultiAdd command, which allows a single table to send data to two or more destination files.)

Multiple table queries

Paradox's 'static' relational features – the ability to combine information from several tables after the data has been entered – are excellent. These all stem from the Ask menu option.

At its simplest level, the Ask command corresponds to setting a filter in Lotus 1-2-3: it creates a second table, extracted from the data in the main table, showing only records which fit specified criteria. However, it goes well beyond that by processing queries of multiple tables at once. You can have as many queries of as many tables as you like; when you tell Paradox to 'Do it', it combines all the queries into one, producing one table using information derived from multiple tables.

The flexibility of the Ask command, and the fact that it creates a new file which can be saved simply by changing its name, overcomes the apparent limitation that the Report function in Paradox can only report from one file. You simply use Ask to create the combined information you want, and then Report from that table.

Programming language

Paradox's programming language is considerably richer than dBase's, both in the user interface hooks that it offers and in the data manipulation constructs. One of the best of the latter is Paradox's array variable, and the copytoarray and copyfromarray commands, which allow the replication and transfer of complex record or array structures with single line commands. In the former category, Paradox has built-in point and pick menus, and the ability to exploit features of the menu-driven Paradox interface.

It has support for procedures, user defined functions, case conditions and all the other attributes of a full command language. In addition, there is an enhanced macro recording facility which enables you to build up a prototype application by recording keystrokes, or to prototype a full application before coding.

You can also maintain secondary indexes with PAL, which partially overcomes my earlier objection to Paradox at the menu driven level, the inability to see a database in any order other than that of the key field.

Focus

Focus is a mainframe hierarchical database (with some relational features) which has recently emigrated to PCs. In the hierarchical model, the different 'files' are actually stored in the one definition, with one file being the parent and its related files the siblings. While this works as well as the relational model, it is much harder to redesign your database to include new relationships, since all files are part of the same file description (the data can be stored in either a single or multiple files; the default is a single file) with the one style of relationship.

Focus' initial user interface is a point and pick menu system, with lengthy text descriptions of what each option does. The majority of these are 'Talk' procedures – window driven prompts which help construct a Focus command from user menu choices. The final command in all cases is a command file in Focus' non-procedural language, which you see being constructed in a screen window as you select the menu options.

It is one of the best implementations I have seen of such a system. The windows are fast, the code which results flexible, and the display of constructed commands a lot better than with dBase's ASSIST. Alternately, once you are capable in the language, you can enter commands directly.

The language includes support for designing windows, formatted data input and so on. Much of the Talk procedure appears to have been written using Focus' windows commands, since they go well beyond screen control and also assist in the design of menus, selection of files or field names, and generation of simple choice lists.

Focus' PC implementation includes the ability to compose requests on a PC and send them to execute on mainframe Focus. There are also facilities to transfer files, extract data in formats suiting 1-2-3, Multiplan and DIF programs, and to conduct sessions on the mainframe using the PC as an intelligent terminal.

Database design

Focus shows only one field at a time while defining fields in a new database, and scrolls through a procedure covering name, type, length, and format using windows to prompt for and nominate options. This defines a text file, which Focus then uses to create a database. The process is rapid and fairly fool-proof.

Unfortunately, modifying a file is one procedure which isn't windows moderated. A file definition can only be modified using Focus' text editor, TED, to modify the definition constructed by FileTalk – it's more difficult than actual file definition.

TED is quite unlike the standard DOS editor, though it will be familiar (painfully so) to anyone used to a bare bones VAX editor. It is command driven, so you commence input with commands like INPUT. Straight text is delineated from commands by pressing two returns after text input is finished. It is line oriented, but it does at least show you all surrounding lines when you are editing a file, unlike DOS' Edlin.

Data structure

The file characteristics of a hierarchical database are complicated compared to the relational model. A hierarchical file has segments, with the first segment being the parent (for example, the store) and all other siblings (for example, the date segment is a child of the store, and the sale segment is a child of the date).

Consider the classic example of an invoicing database. With a relational program, you would design three files. Invoices would have fields for the date of sale, the quantity purchased, customer and product codes, and would derive product price from the linked record in the product file.

The hierarchical implementation of the same problem is quite different. Using Focus, you would design a 'Customer' file with three segments. The first would store the customer details, as per the relational model. The second would store a date only – the date of a sale. The third segment would store the product code and quantity for each good purchased.

The hierarchical model guarantees that each entry in the third segment is linked to one (and only one) date, which in turn is linked to one (and only one) customer. Clearly this is more efficient than the relational model, where you have to use product and customer codes to ensure that you have linked the separate files correctly. It also makes creating reports a lot simpler, on a customer by customer basis – all you have to do is replicate the file structure on a printed form.

But there are several drawbacks which explain why the relational model has gained the upper hand in database design. The major problem is rigidity.

For example, I have designed a database for keeping track of seminar attendees in Open Access with four files – Seminar, Personnel, Attendees and Organisations. If I want to add to the database, so that I can record sales of products to attendees at seminars, all I have to do is create two new files – Products and Sales. The same modification would involve considerable heartburn inside the hierarchical model; I would need to modify the file structure to allow for one extra segment (Sales), and copy the data to the new structure (plus add a relational file called Products). Adding a different style of relationship between existing segments is even harder.

Links between files that enable you to simply enter a product code, and extract all the required information about that product – its name, price, availability and so on – from another file are possible in Focus using a 'cross-referencing declaration'. These act as if the specified external file was actually a segment of the main file. This captures one of the important features of the relational file type, though in a much more complicated manner than for, say, Open Access codes.

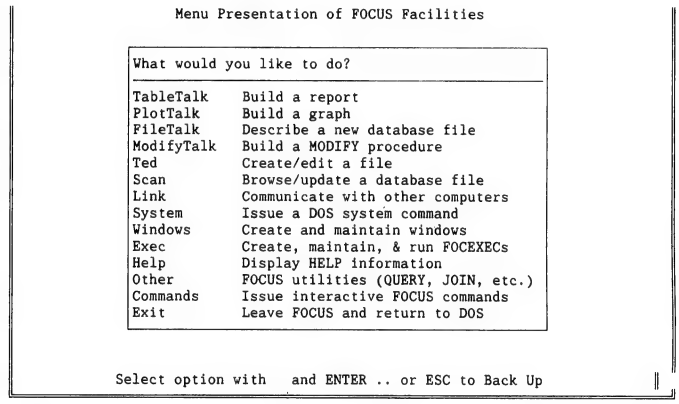


Figure 3. *Focus' initial user interface is a point and pick menu system, with lengthy text descriptions of what each option does. The program's mainframe antecedents allow the user to compose requests on a PC and send them to execute on a mainframe with Focus running and to use the PC as an intelligent terminal.*

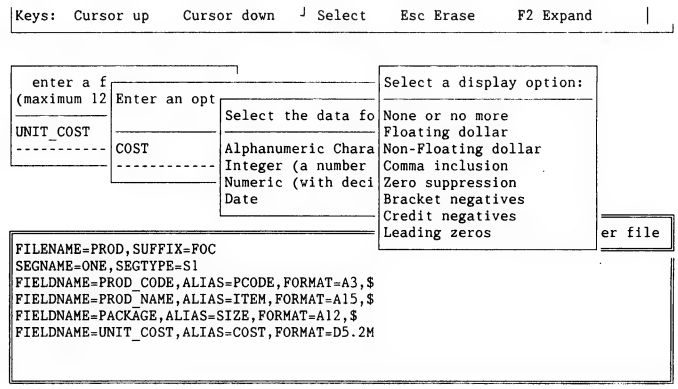


Figure 4. *Focus uses window-driven prompts to construct a command (Master) file from menu choices – the command file appears in its own window.*

Paradox's programming language is considerably richer than dBase's.

Computer Based Information Systems: An introduction, by D.W. Walker, Pergamon Press, Sydney, 1988; 370pp, indexed and illustrated; $29.

It's very hard to resist being boring when discussing computer database systems: they are an inherently dry subject. Walker manages to avoid the temptation for most of this 370 page introduction to the subject.

The emphasis is upon computer databases amid many other systems ranging from a magpie to a rail transport network. While computer database concepts feature throughout, there is no automatic presumption that computer methods are superior: the emphasis is upon getting the information handling right, whatever the technology.

No actual code is presented. The various systems approaches – with heavy emphasis upon Gane & Sarson's flowchart methods, and a limited use of pseudo-code – are the focus instead, with copious illustrations and example applications, all with a humorous bent.

The author's manner is light, a strong contrast to most, if not all, other works in this area. Nonetheless, important database design concepts (such as the entity-relationship model, hierarchial and network systems, distributed versus centralised data storage) are addressed.

It's not for the practicising professional, although it could give anyone considering implementing a computer database some very useful insights. For the undergraduate student approaching computers for the first time, it would be excellent.

Data entry

Focus has a default data entry module which covers entry, editing and deletion. It does not support data validation – preventing duplicate entries for customers, requiring that a valid product code be entered, and so on. To get those features you have to write a command file in Focus' language.

A relational model lets you prevent duplicate entries (two entries for the same customer in a customer database) by designing unique indexes. Focus' alternative is the MATCH command, which checks for duplicate entries and can then be instructed what to do with ON MATCH and ON NOMATCH conditions.

Because the language is non-procedural, the code is quite easy, but it does have obtuse elements. For example, to display the current contents of a record in a formatted record modification procedure, the field names must be preceded with T.

Report generation

Reports, like everything else in Focus, are controlled by non-procedural commands, which can be generated by a menu driven facility called TableTalk. This is quite well written, and easy to drive. Reports are columnar, and the program prompts you through the steps in report definition from specifying the contents of each column to what should be done when the value of sort fields change, headers and footers, and so on.

Matrix reports – basically cross-tabulations as offered by Silverado and Reflex – can be generated using sort keywords BY and ACROSS. 'Sum units sold across store?code by product?code' would produce a matrix of unit sales with the product codes down the side, store codes across the top, and sales volume as the data.

Since Focus' hierarchical files include data which would be stored in several files under the relational model, Focus reports are not prey to the limitation of dBase and the like of reporting from only one file. Multiple files can also be pulled into the one report using the JOIN command, which could for example replace the relatively meaningless store code or product code with the more meaningful store names and product names. Joining two files creates a third, as in dBase, from which a composite report can be prepared.

Data analysis

Focus provides a far larger range of statistical procedures than dBase – options include stepwise multiple regression, analysis of skewness, kurtosis, leads and lags, all features which are normally found only in dedicated statistical packages. However such programs – Statgraphics for example – support a still larger number of procedures.

DataEase

First appearances suggest that DataEase is in the small to middle league of databases. It can handle 'only' 65,000 records per file (with 4,000 bytes per record and a maximum of 255 fields per record) compared to 2 billion records in dBase, Paradox, Open Access and so on, and its user interface is apparently old-fashioned. However appearances are deceptive. It is one of only two programs that I have seen that I would recommend ahead of dBase for the novice user.

DataEase is heavily menu and forms driven. When you start DataEase, you have to select which database to work with, out of 26 one-letter choices. Like Open Access, Zim and an increasing number of programs these days, 'database' does not mean a single file such as employees, or customers, but a complete application with multiple separate files. The initial screen also requires a user name and a password, which is used later to determine how much of each form in the database you are allowed to see. Where the application has been customised, it also determines the menus you see later on (the system administrator would get quite a different main menu to a data entry clerk).

After the sign-on screen, the interface becomes a combination of further 'press the number' menus, and windows. DataEase makes extensive use of a data dictionary, so that at all times your available files and fields within them can be selected from a menu.

Database design

A database is defined by defining its Form. The key function key here is F10, which inserts a field at the cursor position. DataEase takes the nearest text string to the field as the default field name (which can include spaces), which you can alter if you desire. Field characteristics are then entered in a menu which cascades down the screen.

DataEase's field attributes are certainly richer than those of dBase, covering not just name, type and size but security levels for viewing and revising each field, validation and range checks, choice lists and table lookups. However some of its formats –

such as formatted numeric strings – are tailored to US usage only. Don't use its telephone option, for example.

Altering a form definition is quite simple (unlike Open Access). You simply choose modify from the main menu, select the form, then add new fields or highlight any field you wish to alter, press F10 and then go through the menu, altering attributes as desired.

Data entry

Data entry is actually the gateway to functions which normally reside on three separate menus in other programs: entry, editing, searching and (quick) reporting.

Entering a record is a straightforward 'fill in the form' exercise, followed by F2 to enter. However, the form does not clear automatically, which is a bit strange. It does assist with entering several similar records (Open Access' method, which determines whether a value will be 'duplicated' at form definition time, is better). You can clear the whole form with F5, or the current field with F6.

For Browsing and Searching, F3 takes you to the first record in the database, and then scrolls through the records, one by one, with shift-F3 working in reverse. It also acts as the find command; type in a name (including wildcards), press F3, and DataEase will show only those records with that name. Quick reports can be generated by pressing F9, while more complicated reports are a main menu option.

Linking multiple files

Like Open Access, DataEase uses forms to establish links between files. DataEase's method is technically superior to Open Access because it lets you establish a link on the basis of up to three fields. This makes it possible to use customer names as the link between an invoice file and customer file, rather than relying on customer codes.

Defining relationships in DataEase involves two steps. The first is to define related fields in each database as 'derived' fields, using the form definition module. The second stage is to specify when two records in the databases are to be regarded as related, using the menu and relationships module.

DataEase presents a form with options for the two 'entities' being linked (Entities are database files, for example, customer and invoice. Computer jargon is changing; the word entity will probably replace 'database' to imply a single file containing information about one subject. 'Database' will refer to a related set of files in the one application.), up to three fields which are used to establish the link, and optional names for the relationship you are defining.

Consistent with the remainder of the program, DataEase prompts you, firstly with the names of the entities in the current database (products, employees, call list and stores in the tutorial database), then with the names of the fields in the chosen databases. All you have to do is type the number corresponding to your choice each time.

All the relationships you define in a database are stored in a system file which is itself part of the database, and it employs the same management methods as does the simple entry of data. You can 'page through' your relationships using F3, search for them, edit and delete them, as easily as you can records.

While DataEase's relationship definitions are more flexible than Open Access, the latter has the upper hand at data entry. If you have linked an invoices file to a customer file, and type in an unknown customer name, Open Access pops up a window showing you the nearest match in the customer database. You can then

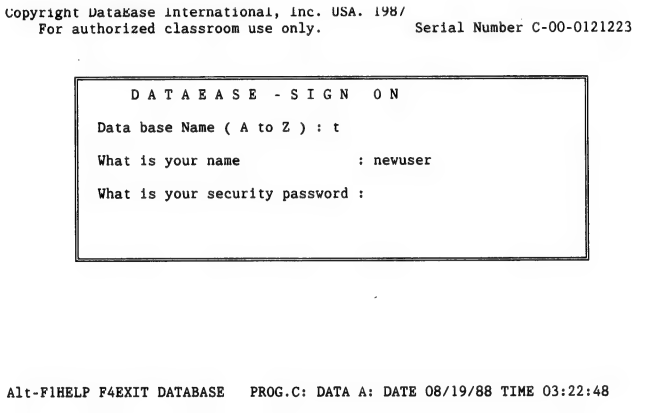


Figure 5. DataEase's initial screen requires a user name and a password, which is used later to determine how much of each form in the database a user is allowed to see.

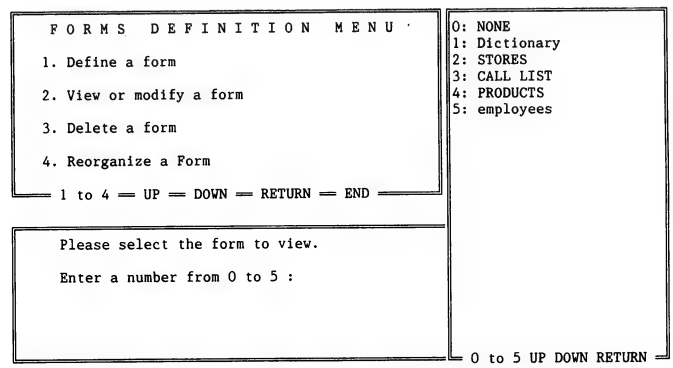


Figure 6. DataEase uses the Form to define the structure of the database. ALtering the structure is quite easy – simply chose '2' from the menu shown above and then add fields or modify their attributes as required.

either 'point and pick' the correct customer in the case of a typing mistake, or press Control-Enter to enter a new customer.

If you enter an unknown customer into DataEase's invoice, the derived fields simply remain blank. You can also enter the record into the database, meaning that you will have an invoice for which there is no known customer.

Reports

F9 invokes the definition and execution of quick reports from DataEase's data entry module. This commences with a report generation menu with 10 options, four of which you execute in sequence to design a report (the last 4 concern file management). The opening issue is record selection; next comes field selection, defining a report format, and print style.

Fields are selected for inclusion in a report just by pressing the spacebar. They can be sorted in ascending or descending order, and display statistical summaries as well as simply field contents.

The default columnar report format uses two lines for field names (using the actual field name as a heading, which you can alter). Simple reports allow a variety of formats, from the standard

columnar to one field per line and special formats for data exchange and so on.

More complex reports employ DataEase's query language, which is similar to SQL (the quick report in fact composes very simple query language statements). You can either enter report statements directly, or have DataEase prompt you for field names, attribute options, and so on, using its Interactive mode.

A report begins with a For statement which specifies which file to report from, the a List statement followed by the fields to be listed, each separated by a semi-colon. They can include lookup fields which extract information from other databases, listing either the first record matching the lookup criteria, or all records (unlike dBase's SET RELATION TO command, which only finds the first matching record). The DataEase statement for incorporating every matching occurrence of a field in a related database is a simple –

```
FOR mainfile;
LIST records
       fieldname1; "fields in the mainfile database"
       fieldname2;
       ALL related_file fieldname; "This pulls in all linked
records in the related_file - product names instead of product
codes, etc."
```

The appearance of the printed report can be massaged with commands which give headers, footers, level breaks, English language column titles rather than the default field names, and so on. The printer definition component of report design is excruciatingly simple, compared to that in many database (and even word processor) packages, and it incorporates control over text attributes such as boldfacing, underlining and italics.

The prompted design of a report (the Interactive option) and the sophisticated query language (with the ability to pull in information from multiple files) makes it extremely easy to get information out of DataEase, yet doesn't compromise the complexity of information retrieval. In contrast, dBase's relatively well designed report module limits you to reports from one database only – largely defeating the purpose of a relational database.

Customising DataEase

DataEase requires each user to sign on with a name and a password. The system controller can compose special menus which are linked to each user and his or her password, so that rather than seeing the standard DataEase menu, they are presented with one suited to their position in the company. The menus are cosmetically identical to the DataEase main menu, with numbered options to execute choices. A menu choice can call other menus, allow data entry, execute programs, run reports, backup data files, basically all the operations within DataEase. It is thus possible to design a customised application with DataEase, with no programming.

And the winners are . . .

Matt Whelan's August editorial commented that while it was okay for characters like me to do without support and select the best database around (which I had said was ZIM), the vast bulk of users are better off with the deficient but far better supported dBase.

That is true when the alternative is another command driven program – such as ZIM – which has far greater power than dBase but, like dBase, requires you to learn a programming language to get results. But databases are evolving rapidly, and the day of the relational database which is as easy to drive as a simple word processor or spreadsheet has already arrived – in the shape of DataEase and Open Access. They both pass the Whelan Test: with either program a novice user can (after reading the manuals), design a database linking multiple files in a fashion which would take an expert's ability using dBase.

As an illustration, I have designed an Open Access database to index my filing system. There are six databases: Articles, Files, Subjects, Authors, JourBook (Journals and Books), and Art_Sub (which links articles to multiple subjects). If I enter an unknown Article into Art_Sub, the program pops up a window showing the currently entered articles. I can then either point and pick a current article, or enter a new one. If the new article has an unknown author, then likewise a window pops up with currently entered authors; and so on through JourBook and Files, if necessary, before returning to the original file.

You simply could not write such sophisticated multi-file data entry code in dBase, and an approximation to this would take a dBase expert at least a week from scratch. I put the above system together in under half an hour, without programming. Designing a reporting system accessing multiple files was only slightly more work, employing SQL and creating a form with fields extracted from several databases.

A similar system would be also easily designed under DataEase, without the ability to update related files on the fly, as you can with Open Access, but with a more sophisticated link between the related files. Either way, I would be far happier to see a novice walk out the door with one of these two programs than with dBase. I would be assured that they would get the basic results they wanted, in a lot less time, for a lot less money, with much less effort, than if they had purchased dBase.

There are still problems with both programs. Open Access has a very complicated system for modifying files – you are best advised to make a trial system, see what changes are needed, then delete it and start again. DataEase doesn't properly handle the entry of invalid linking fields. But those problems are relatively minor, compared to the fact that they have made designing a relational database an order of magnitude easier than with dBase.

That's at the straightforward end of applications. For truly complicated relational manipulations (such as a University Department allocating students to tutorials on the basis of three preferences, or share market traders trying to distribute risk across a portfolio), DataEase is not in the race, since it lacks a programming language. Open Access may be up to the job, but more likely ZIM would be required.

The next question on the database front is how will dBase IV shape up. By the time it arrives, it should have another 'power' competitor too – Emerald Bay, by the author of the original dBase, Wayne Ratliff. We will, of course, conduct a shootout. □

Product Details

Product: Paradox V2 **Distributor:** Tech Pacific,
15 Epsom Rd, Rosebery 2018 NSW; (02) 697 7111
Price: $1389.60 taxed

Product: Focus **Distributor:** Computer Power Australia,
616 St Kilda Rd, St Kilda; (03) 520 5333
Price: $1975 untaxed

Product: DataEase **Distributor:** DataEase Australia,
Suite 559, 203 Edgecliff Rd, Edgecliff 2027 NSW;
(02) 327 8162
Price: $1250 taxed (single user)
$1410 taxed (LAN pack)

Microsoft Windows 2.03 and 386

John Hepworth looked at Microsoft Windows (386 and Version 2.03) and found that if you've got a '386 (or kids!), it's a must.

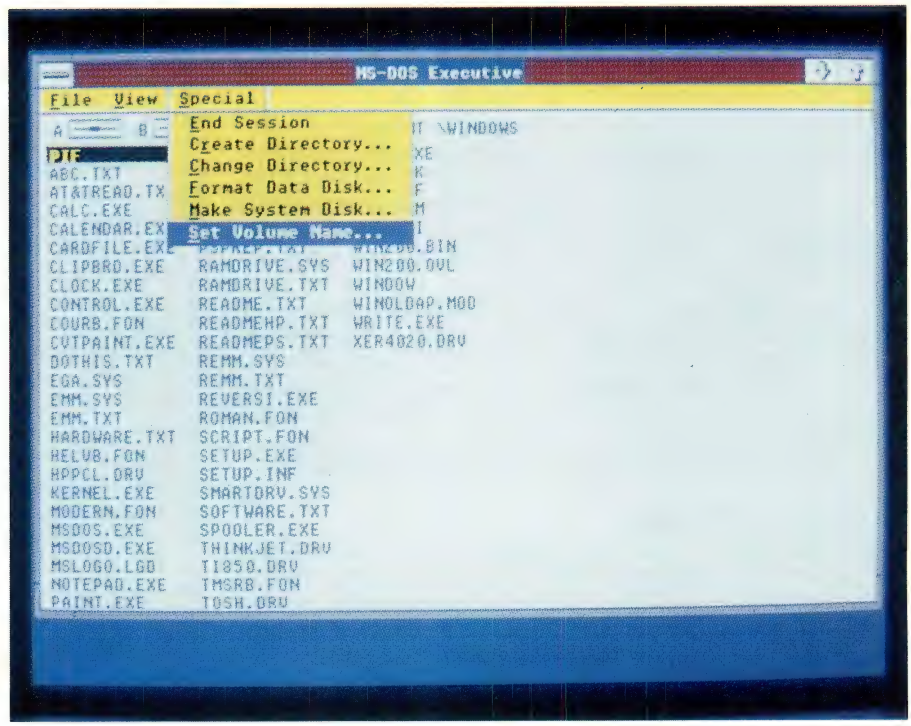


Figure 1. *The MS-DOS Executive is used to run an application, end a Windows session, manage files, create and change directory listings and format a disk.*

OVER THE LAST few years a trend has become a wave. No longer must users put up with character type displays, with the appearance of the screen being limited by the available fonts in the computer's ROM. Xerox pioneered the use of a graphical interface, icons and mice. Its work was picked up by Apple with the Lisa and then the Macintosh. It was, perhaps inevitable, that a graphical interface would be created for the IBM PC, and it came in the form of the Windows operating environment.

Version 1 of Microsoft Windows has been around for a couple of years. Two new versions were released earlier this year. They are extremely similar in their appearance, but with different power due to the features of the underlying systems for which they have been designed.

Windows 2 can run on almost any MS-DOS or PC-DOS machine, using any of the common processors, the 8088, 8086, 80286 or 80386. In addition, there is a special version of Windows for the 80386, with the ability to give standard DOS applications their own virtual DOS machine, with up to 640 kilobytes of memory per application (as long as the machine has enough installed). A vast array of video displays, printers and other hardware devices are supported, and the user's configuration is set during an extremely simple installation session.

The Windows Basic

Behind Windows is a basic principle. The screen can be divided into independent areas, which are termed windows. In each window the output from a different program can be seen. Terminology could get really messy, so I had better give a quick definition. I will from now on talk about 'Windows' when I refer to the programs Microsoft Windows 2 or Microsoft Windows 386 and 'windows' when I refer to an area on the screen.

The Windows displays are graphics based. Software controls all aspects of the screen appearance, which is no longer limited to the shape of characters burned into the computer's ROM. In addition, Windows allows the development of software which is independent of the underly-

ing hardware. The applications software developer writes a program to the Windows standards. Software drivers interface between Windows and the various bits of hardware like video or printers. A side advantage is that, when a new hardware device is released, users don't need to upgrade all their favourite bits of software, but just install a driver for the new hardware (possibly from the hardware manufacturer) and keep on going without a pause.

The other great advantage of Windows is that is has multitasking. The user can have one, two or several programs running at a time. If the programs are specifically written for Windows, or are normal applications which were written as 'well behaved' programs without fancy tricks, such as writing direct to the video hardware, it is easy to have their output simultaneously visible on the screen in separate windows. If the programs are badly behaved, it might be necessary for them to use the whole screen when active, and have other programs temporarily invisible but running.

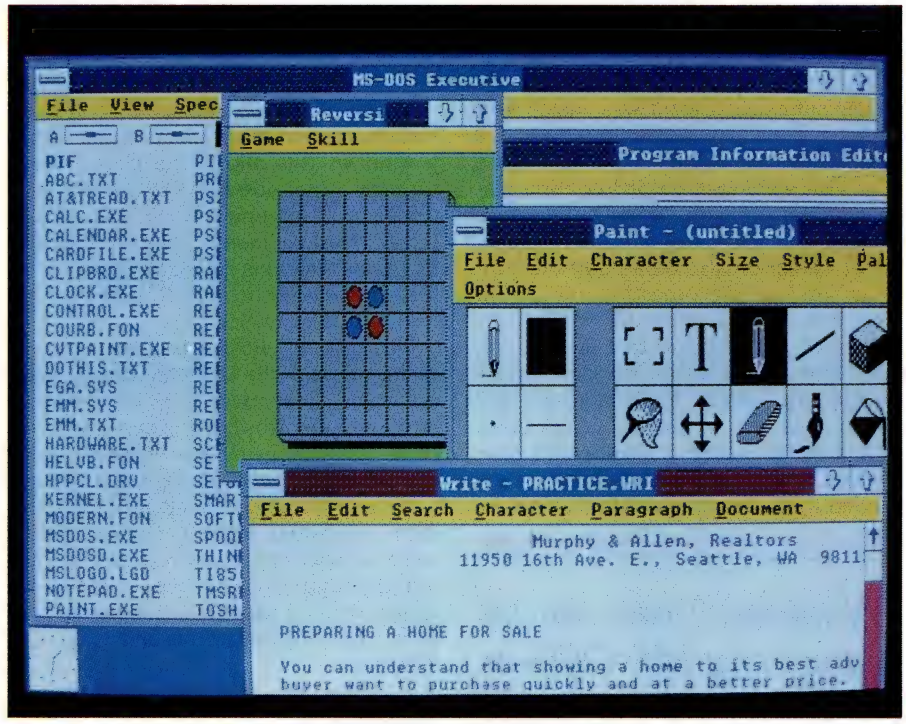


Figure 2. *With both versions of the program comes a selection of applications: Windows Write, Paint and Desktop Applications (Notepad, Calculator, Cardfile, Calendar, Clock, Terminal and Reversi).*

A typical window

Programs running under Windows have their output visible in a separate area of the screen. Windows vary in size, but share a standard appearance. A frame a couple of millimeters wide surrounds the window. The frame is drawn with two fine parallel lines which have a stipple between them. Across the top of the window, just inside the frame, is the Title Bar, showing the name of the window. To the left of the title bar is the Control-menu Box, which is a square with a 'slot' in the front, looking a little like a letter box. To the right of the Title Bar are two more boxes containing arrow symbols. The Maximise Box has the arrow pointing up, and selecting it with the mouse makes the window fill the whole screen. The Minimise Box has an arrow pointing down, and selecting it reduces a window to an icon. Programs continue to run when reduced to an icon, with some becoming static symbols and others (mainly graphics demos) continuing to be seen changing within their icons.

Below the Title Bar in most windows is another row in which the names of one or more menus can be seen. Pointing to the Control-menu Box, or any one of the menu names, with the mouse pointer and clicking the left button pops down a menu

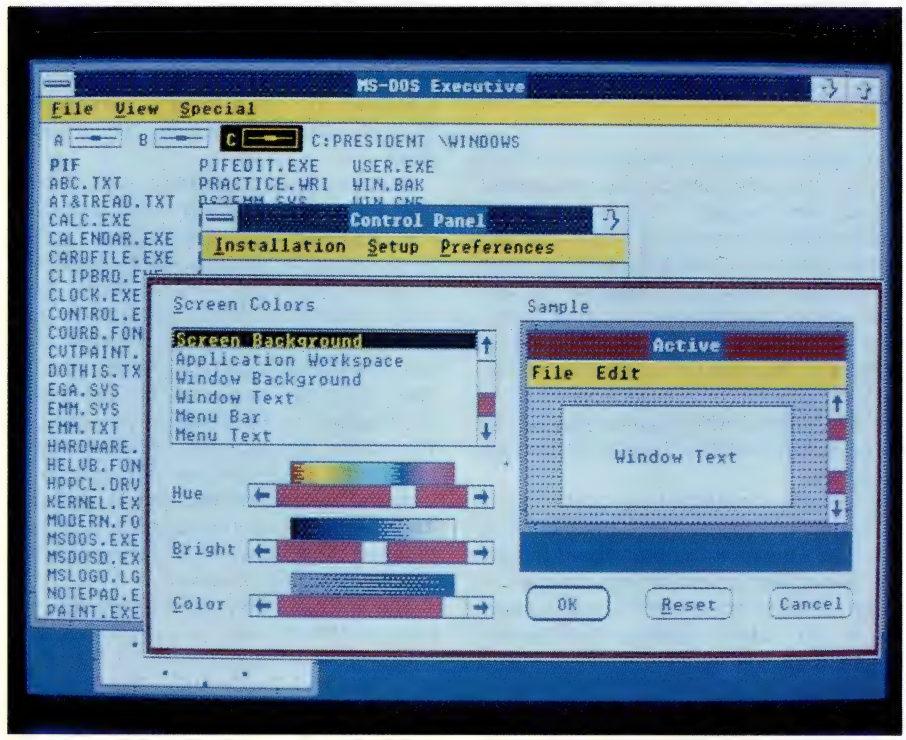


Figure 3. *The Control Panel allows the user to customize some system settings, add a printer or font, setup a communications port, control screen colours, and so on.*

with several options. With Windows 1 it was necessary to keep the button down or the menu would retract. With Windows 2 the menu stays put until another one is selected or the pointer is moved with the mouse outside the menu area and clicked.

Six options are accessible from the menu under the Control-menu Box. Close allows the window to be closed. If the window in question is the MS-DOS Executive window, opened when Windows started, the Close option also terminates the Windows session. The other five options in the Control-menu allow for various actions with the keyboard that are done in more direct ways with a mouse. Restore expands an icon to its former size and screen location. A window is relocated with Move, stretched or shrunk with Size, reduced to an icon with Minimise or expanded to fill the screen with Maximise.

Windows 2 can run on almost any MS-DOS or PC-DOS machine, using any of the common processors, the 8088, 8086, 80286 or 80386.

If more than one window is on the screen at a time they can be overlapped, moved and resized. Individual windows can be moved by pointing to the Title Bar at the top of the window, holding down the mouse button and dragging the window outline to the desired location. A window is resized by taking the mouse pointer to the side (left, right, top or bottom) or corner to be moved, holding down the left button, and dragging the side or corner till the window has the desired appearance.

Windows is multitasking, and can run more than one program at a time, but only one at a time can accept keyboard input. The Menu Bar of the active program is shown dark on mono screens and changes colour on colour screens. Moving the pointer onto an inactive window with a mouse and clicking the left button makes it the active window, and if any of it is overlapped by another window then all of the newly active window becomes visible.

In addition to all the above controls and menus there are Dialog Boxes. When a user must choose from several options, such as choosing one file to load, a Dialog box appears, and presents a range of options from which the user may choose. Another set of controls allows a display to be scrolled up and down or sideways, within a window. This allows the user to look through a file, possibly a document in a word processor, and make a desired part visible. The user merely points to the right or bottom margins of the window, or selects arrows at either end of these margins or a box partway along it.

Windows is most easily run with a mouse, though the keyboard can be used quite well. If a mouse is to be used, the outline of an arrowhead is seen, and can be moved with the mouse. When the tip of the arrowhead is on an item and the left button of the mouse is clicked once, the item is selected. If the button is clicked twice in quick succession instead, the selected program is activated, or if the selected item is a data file with a known program, the program is run and loads the data file.

Installation

Before getting into the details of actually running Windows, a few details on installing it and getting it going are needed. Microsoft Windows 2 comes on nine 5¼ inch disks, although an alternative version with 3½ inch disks is available. Windows 386 has three 1.2 megabyte 5¼ inch disks as well as five 3½ inch disks.

On one disk is a program called SETUP.EXE. It is a menu-driven installation routine. Running the Setup program brings up a series of screens which detail the possible hardware configuration, from video board through to printer. The user specifies the name of the directory into which Windows is to be installed, and the Setup program does the job, prompting for floppies to be changed as required. The screen layouts of the install program make good use of the box drawing characters, and are easy to read and understand. Anyone who has ever installed a Microsoft program in recent years will recognise the simple procedure involved.

The Windows 2 setup program has entries for IBM PC, XT, AT (or 100 per cent compatible), PS/2 Model 25, 30, 50, 60, or 80, AT&T and Tandy 1000. Windows 386 can be installed on the Compaq 386, AT&T 6386/6386E WGS, H-P Vectra RS, PS/2 80, Intel Inboard AT, Olivetti M380, Wang PC 380 and the Wyse PC 386 Model 3216. Other machines will also run Windows successfully. As just one example, the copy of Windows 386 that I have did not specify the Toshiba T5100, but Matt Whelan tells me that he had no trouble installing Windows 386 on his T5100 using the Intel Inboard AT option from the setup menu.

Video boards supported by Windows 2 include EGA, in 5 modes, MCGA, VGA, Hercules, AT&T Colour DEB, AT&T Monochrome, Compaq Portable Plasma and Tandy 1000 Colour. Windows 386 includes drivers for Compaq Enhanced Color Graphics, EGA, CGA, VGA 640 *x* 450, VGA 640 *x* 480, ATT&T, Compaq Plasma, Compaq video display controller board and Olivetti OEC. It is quite possible to run other video boards with either Windows 2 or Windows 386, and I did so when testing the Wyse WY700 monitor, with matching video board, in conjunction with my review of the Wyse 3216 (see the August '88 issue). In this case, drivers for the WY700 came on disk with the hardware.

A vast range of printers and plotters are supported, including laser printers with and without PostScript. In addition, the user can specify the keyboard style being used, and the country so that time/date/currency symbols are correct. Windows supports most of the common mice, not just the Microsoft Mouse. Just as well, because while Windows can be run quite well without a mouse, one really should be used to get the best combination of power and flexibility.

Windows can be installed on a system with two 360 Kbyte drives or one 720 Kbyte drive, but it is really crippled without a hard disk. As far as video is concerned, while Windows can be run on CGA, a higher resolution display is very desirable. A Hercules board, particularly with a white screen monitor, is great. VGA and EGA are excellent.

Running Windows

Changing to the subdirectory containing Windows and typing WIN gets things going. The main program loads and a brief opening logo appears. Next appears a window, grandly called the MS-DOS Executive. This lists the names of the files in the Windows subdirectory in normal text, and the names of any subdirectories beneath it in bold text. Before going any further, I must note that unlike the typical PC or mainframe terminal, Windows does not use bright letters on a dark screen, instead it uses dark letters on a light screen.

At the top of the MS-DOS Executive window are stylized impressions of a floppy disk drive, one for each of the available floppy or hard disk on the system. The default drive is shown in reverse intensity. Next to the row of drive images is the full name of the current directory, including the drive letter, the label of the disk, and the current subdirectory.

Changing drives is done by pointing to the image of that drive with the mouse and clicking once. Changing to a lower subdirectory is done by pointing to the subdirectory name and clicking twice. At the top of the screen is shown the drive/label/directory, in something like C:MYDISK WINDOWS?FILES. when one is in the C:?WINDOWS?FILES subdirectory. Want to change to, say, the C:?WINDOWS subdirectory? Just point to 'WINDOWS' in the drive:label subdirectory?subdirectory string and click twice.

At the top of the MS-DOS Executive window are four options. First is the Control-menu Box. The others are labeled File, View and Special. The Files menu allows for files to be Loaded, Copied, Get info (the full filename, creation date and time for the selected file are shown in a window), Deleted, Printed or Renamed. Programs can also be Run from the files window, and the details of this come just a little later.

The View menu has options which show the file directory in short format, with name and extension only, or long format, with all files having name, extension, file size, date and time. The listing can show all files in the directory or just those which are executable programs. Another group of options within the View menu changes the way the directory listing is sorted. Possibilities are by name, date, size and kind, where 'kind' is the file extension and the other three have the conventional meanings.

The Special menu in the MS-DOS executive allows the user to end a session, change directory, create a directory, format a data disk, make a system disk (in other words, format a boot disk with the operating system on it), or set the volume name (more commonly known as the disk label).

Standard applications and windows applications

Two basic types of programs can be run under Windows. Programs written to be run directly under DOS without Windows are called Standard Applications. Applications written specifically to be run under Windows are called Windows Applications. Programs are run by selecting the program name, or selecting a PIF file, or by selecting data files created by Windows applications. PIF files are Program Information Files. They have a .PIF extension, and contain the information which allows Windows to run standard applications written for DOS and not for Windows. A utility program PIFEDIT.EXE is included which allows the user to create .PIF files or to modify existing ones. It is a Windows program and is run within a window.

I should note here that the significant difference between Windows 2 and Windows 386 is their relative ability to run standard applications. Windows 386 allocates a virtual machine for each standard application, with each virtual machine having up to 640 Kbyte of memory. Another 640 Kbyte machine is allocated for the Windows applications. Windows 2 has to put standard applications and Windows applications into the same 640 Kbyte. With Windows 386, each application can have less than 640 Kbyte allocated to it if it does not require the full 640 Kbyte, but even so, for reasonable flexibility and power, a machine with 2 Mbytes should be considered the minimum.

Many standard applications programs can be run successfully in a window in Windows 386, and a somewhat smaller number in Windows 2. All can be run using the full screen on either version. One of the tricks for making a program run in a window is to ensure that it does not write direct to the screen, and many programs allow the user to specify BIOS writes rather than direct screen writes. All applications written specifically for Windows (like PageMaker) run well in a window on either.

Bundled applications

With both versions of Windows comes a selection of ready to run Windows applications. They fall into three groups – Windows Write, Windows Paint and Desktop Applications.

Windows Write is a simple but competent word processor. It is true WYSIWYG (What You See Is What You Get). It has a range of type faces, including Helvetica, Times Roman and others. Typesizes from 8 to 24 points are available. Output is sent to the printer in graphics form and so the height of a letter is under software control and not limited by the maximum line height of the printer. Line spacing automatically adjusts to suit the largest font on the line. Graphics can be pasted in from other applications. It is a good, simple way to get quite adequate quality documents with a good range of fonts.

Windows Paint is a typical sketching package, though it is more powerful than many. It is not a competitor to even the low end Cad packages, but my 5 year old loves to draw pictures with it and competent illustrations for a document can be made with it.

The Desktop Applications comprise a group of useful little tools. A four function calculator is one, and the others include Notepad, Cardfile, Calendar, Clock, Terminal and Reversi. Notepad allows the easy creation of simple notes and reminders.

With Windows 2 the menu stays put until another one is selected or the pointer is moved with the mouse outside the menu area and clicked.

Cardfile is an elementary database. Calendar is a reminder and appointments system. Clock puts an analog clock on screen, with a sweep hand, and shows the current system time. When reduced to an icon, the time is still visible and the hands still move.

Terminal is a simple communications package or terminal emulator. While it allows autodial it does not have an error correcting file transfer protocol like Xmodem and is limited to simple serial transfers.

I had better warn you about Reversi. It is the old Othello game, and can be played at four skill levels, Beginner, Novice, Expert and Master, though playing at Master level needs a fast machine or the time the computer takes to make its move becomes too long. At first the challenge is to beat the machine at all, even at Beginner level. As the player's skill builds up it becomes completely addictive to adult or child.

Documentation

Windows 2 and Windows 386 each comes with one major paperback manual nearly 3 cm thick. It is really four separate manuals, each with its own table

of contents, page numbering and index. Fortunately, each section is marked on the edge of the pages and can easily be found. The sections are Microsoft Windows User Guide, Desktop Applications User Guide, Paint User Guide and Write User Guide. In addition, both versions of Windows have a Quick Reference Guide in the form of a little booklet. Windows 386 also comes with an additional booklet covering the installation and operational differences between it and Windows 2, but otherwise relies on the generic Windows documentation.

Who needs windows

Three groups of people need Windows. If you have any of the 386 machines, you need Windows, to multitask standard applications. I ran Windows 386 on Compaq Portable 386, PS/2 Model 80 and Wyse PC 3216. In each case the multitasking allowed me to do things like have a communications program in one window downloading from a bulletin board while I used a word processor in another window.

If you have a program specifically designed to be run under Windows, you need Windows. A typical program in this category is the PC version of PageMaker. Many such packages come with a run time version of Windows, but the run time versions can run just the program with which they are packaged, and no multitasking is available.

Running the same package in a full version of Windows allows far more power and flexibility. One such program is the Microsoft Pageview program which reads Microsoft Word files, integrates graphics into them, and displays them on screen exactly as they appear on paper. When run from the full version of Windows, all features are active, but when run from the run time version, graphics integration is not available. Many commercial packages have been released to run under Windows, freeing their developers from the tyranny of making sure they run on a plethora of hardware. There are even some Public Domain programs, including a H-P calculator emulation and graphics.

If you have children, you need Windows. My children, 5 and 9 years old, are fascinated by Reversi, Windows Paint and Windows Write. Without them, Windows is a multitasking/graphics environment that is only necessary when you have a package specifically written to run under Windows. With Write, Paint and so on, Windows becomes an application in its own right, one that is immediately useful in most households.

I like Windows. It is one of the few packages that I am sure will stay on my hard disk indefinitely. □

Product Details

Product: Microsoft Windows 2.03, Microsoft Windows 386
From: Microsoft, Unit 2, 1 Skyline Plc, Frenchs Forest 2086 NSW; (02) 452 0288
Price: Microsoft Windows 2.03, $199
Microsoft Windows 386, $392
(*Both prices taxed.*)

THE TEMPLATE SERIES

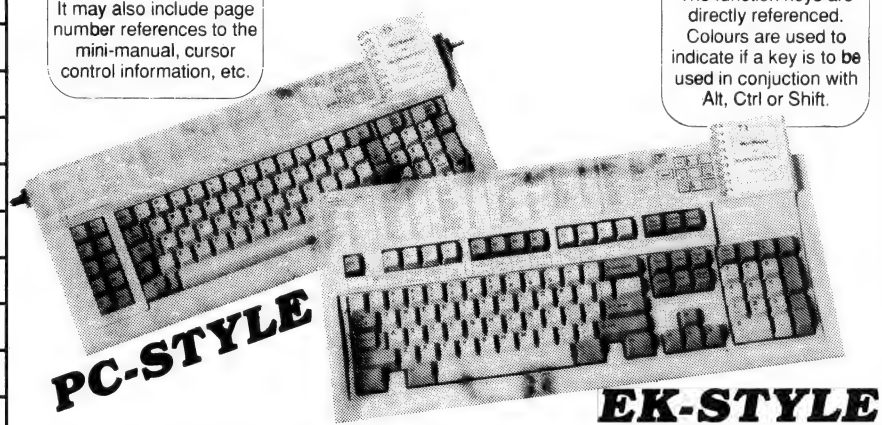
TEMPLATES AVAILABLE

Lotus 123 1.1/2.0
Wordperfect 4.1/4.2/5.0
Microsoft Word 3.0/4.0
Displaywrite 3/4
Multimate 3.3/3.6
Multimate Adv II
Wordstar 2000+
Dbase III Plus
Symphony
Turbo Pascal
DOS
BLANK - Make your own

The surface of each template shows the complete menu structure of the program. It may also include page number references to the mini-manual, cursor control information, etc.

Each Template is made of high-impact moulded polystyrene.

The mini-manual is a specially condensed guide to your software. The function keys are directly referenced. Colours are used to indicate if a key is to be used in conjuction with Alt, Ctrl or Shift.



PC ACCESSORIES PTY LTD

P.O. Box 374, Turramurra NSW 2074
Phone: (02) 449 4721 Fax: (02) 488 9285

For further information please return this coupon to P.C. Accessories Pty Ltd. P.O. Box 374, Turramurra NSW 2074

Mr/Mrs/Ms _____

Address: _____

_____

Telephone: _____(Optional)

YC 11.88

Hardware Hacking – Part 3

Tom Moffat debates whether EPROMs are permanent memory or not – and tells how to copy your own.

EPROMS, OR ROMs, are the heart of your computer. Don't believe it? Well, just remove them, turn it on, and see what happens. Nothing! The computer can't move without them. So, let's look at what EPROMs are and how you can protect your computer against their failure.

Just to illustrate how important ROMs are: the computer I'm using to write this isn't my usual IBM clone. It's a ROM-based Microbee, set up on a picnic table outside a beach house at Port Cygnet in southern Tasmania. This little computer lives here, as does all its software, so if I get inspired while 'down at the shack' I can pull the Microbee out of the cupboard and get stuck into writing, programming, or whatever. No loading of software, it's already sitting in the computer, in EPROMs, ready to go.

Just under half the Microbee's memory space is taken up by EPROMs. They are programmed with such goodies as Basic, Forth, Editor/Assembler, Debug, Disassembler, and weather facsimile and radio-teletype reception. The EPROM I'm using now contains WordBee, which is a subset of the WordStar word processor. When I return to Hobart this article will go with me on cassette (yes, some of us still use them!). This will be played into a disk-based Microbee, translated into proper WordStar format, and then transferred via PC-Alien to the IBM clone for final finishing off and checking.

It was a sad day when Microbee stopped making these EPROM-based computers. Had it kept them going maybe the company wouldn't be in the strife it is in today. I guess you could go out and buy one of those IBM-compatible laptops and accomplish the same thing, but then the price is measured in thousands, not hundreds of dollars – a bit much for a machine that spends most of its life in a cupboard in a holiday home.

What is a ROM?

ROMs are permanent memory chips (Read Only Memory), containing programs and data written into them in the factory when they were made. A ROM will retain its contents forever, or at least until it fails or is blown up in a faulty computer.

EPROMs serve exactly the same purpose, but they are not programmed during manufacture. The EP part of EPROM stands for Electrically Programmable. EPROMs are plugged into a special electronic gadget, usually under control of a computer, and are programmed either by an equipment manufacturer or the end user. And if you want to change what's in an EPROM, you can totally erase it by exposing it to a whacking big dose of ultraviolet light.

Every IBM-type computer, or any disk-based PC for that matter, will contain at least one ROM or EPROM, generally referred to as the Boot ROM. Instructions within it are executed when the computer is first fired up. The code's main purpose is to read further code into the computer from the disk and then jump to it, giving control of the computer to the instructions on the disk (the DOS, or Disk Operating System). Most Boot ROMs also contain machine code subroutines for reading the keyboard, printing characters on the screen and so on. This code is known as the BIOS, or Basic Input/Output System. There may be more subroutines on the disk which are read into the computer when the disk boots.

As you can see, the computer would be pretty useless without its ROM. ROMs are pretty safe, but EPROMs, by their very nature, can lose their memory over time (go senile?). According to some EPROM application notes I have, you can expect an EPROM to remain programmed for around ten years. This might seem like a long time, but the computer I'm using now is four years old, meaning I can expect the EPROMs to start fizzling out six years from now. I fully expect to be using it by then, there's no reason why I shouldn't!

In the unprogrammed state, each memory bit in an EPROM is high, so every memory address in the chip will show 11111111 in binary notation, FF in hex, or 255 in decimal. The act of programming an EPROM sends a 50 millisecond blast of 25 volts or so into each bit that is to be set low. This electric charge is then stored, and every time you read a memory location every bit that has been charged will be a zero, the rest will remain ones.

To remove the charges and restore everything to ones, you expose the chip's innards to ultraviolet light. There is a little quartz window for this purpose, which is normally taped over when you don't want to erase the chip.

However, due to the obstinate nature of things, the electrical charges can slowly bleed off (over ten years), even without

the ultraviolet light treatment. As the charges die, memory locations that are meant to be low will intermittently read high.

I once watched this happen very graphically when a character font EPROM on an IBM mono/graphics card began to fade away. Every memory bit that went high put a new little fleck of light within the normal characters, giving the appearance of a typewriter that needed its type hammers cleaned. Sometimes the little flecks would wink on and off. The problem was fixed by borrowing an identical card and then copying its EPROM onto a new chip. The faulty card was an Asian el-cheapo special, only a few weeks old, yet its EPROM died. How many of you out there own Asian el-cheapo computers? Perhaps we should back up the EPROMs right now! If they later go bung you will have an exact copy of each on disk which you can use to program a new EPROM.

Even if your computer is a very popular make, there's an overwhelming likelihood its ROMs are, in fact, EPROMs. This is because ROMs, being programmed during manufacture, become a custom manufacturing run. This isn't economically viable unless you're talking about many thousands of chips in one hit. Most computer makers prefer to program their own EPROMs as needed, and if they update their operating systems they can program further EPROMs with the new version. As well, being erasable, you can bury your mistakes with a dose of ultraviolet light and then re-program the same chips correctly.

EPROM area

Now it's time to open up your IBM-compatible/clone to see what EPROMs we have to back up. We're talking about a PC/XT computer now, but similar comments apply to others. The main EPROM area is in the centre-left part of the system board, under the plug-in cards.

EPROMs are almost always mounted in sockets, even if other chips on the board are not. You may find only one EPROM socket, occupied by the Boot/BIOS EPROM. This will probably have an identifying sticker on it, although I have seen some left totally nude with the quartz window exposed to any unwanted light.

You may also notice anything up to five extra EPROM sockets directly to the left of the Boot ROM, which may or may not be occupied. And they may or may not be labeled as ROM-2, ROM-3 and so on. Occupied or not, each of these sockets has a unique address within the IBM's addressing space. These addresses must be specified in order to back up each chip onto a disk file. Here are the socket labels, their addresses, and their usual use –

ROMs are pretty safe, but EPROMs, by their very nature, can lose their memory over time.

ROM-2	F400:0000	Empty, but has possibilities.
ROM-3	F600:0000	ROM Basic in True-Blue IBM
ROM-4	F800:0000	" " "
ROM-5	FA00:0000	" " "
ROM-6	FC00:0000	" " "
ROM-7	FE00:0000	Boot/BIOS EPROM

The EPROM chips, in the PC XT at least, are type 2764. They may be marked with leading or trailing characters, but 2764 will be in there somewhere. The '64' part means there are 64 kilobits in the chip, or 8 kilobytes. I understand that very early machines had 2732 chips (4 Kbyte) and some very recent clones may have 27128s (16 Kbyte). You must know the size of each chip so you'll know how much memory to record to disk for each EPROM.

You will now have to pull out your DOS disk and fire up DEBUG. We will also require some space on another disk to store the 'images' or exact copies of the EPROMs we are backing up. If you followed our August '88 article about changing clock speeds, you will have already had a go with DEBUG. If not, grit your teeth and type DEBUG and you will be rewarded with a hyphen (–) as a prompt character. Debug now lurks, waiting . . .

Before attempting to copy any EPROMs to disk, we'd better look and ensure that we are actually reading the right thing. Let's start with the Boot ROM, at address FE00:0000. From the Debug prompt, type D FE00:0000. You will see a display of hexadecimal bytes on the left of the screen, and a display of ASCII characters on the right. Buried in all the ASCII gobbledygook you should see text identifying the manufacturer of the ROM BIOS, and perhaps a copyright message telling you that you shouldn't be doing what you are about to do. Ah well, the copy is to be a legitimate backup, after all.

Due to some quirk in Debug, at least in the version I use, it can't seem to record information directly from an EPROM onto disk. Maybe Debug's WRITE command doesn't like crossing segment boundaries or something. So it's necessary to block-move the EPROM's contents into the area being used by Debug, and we can then save it to disk from there. Whatever you do, *don't* copy the EPROM to address 0000 in the Debug area; the first 100 bytes or so get corrupted. I usually move the data to address 2000, because I got the habit of using that address on Microbees.

We use the MOVE command: M FE00:0000 1FFF CS:2000. This means 'assume segment FE00, take addresses 0000 through 1FFF (8 Kbyte worth) and copy them to addresses starting at 2000 in the code segment'. To ensure this has actually happened, use the DUMP command again: D 2000. You should see exactly the same thing you saw when you looked directly into the EPROM. If this is correct, you can now write the EPROM image to disk. Note that if your computer has EPROMs with a size different from 8 Kbyte, you will have to adjust the length of the block to be moved, and the length of the block to be written to disk.

First you must decide what disk to use, and what to call the EPROM image file. If you want to record it on drive B:, with a filename such as BIOS.ROM, use the NAME command: N B:BIOS.ROM. Next you must manually set up two registers with the length of the block you want to record. Messy but necessary. Use the REGISTER command: R BX – you will see a four digit hex number, probably 0000. Now type 2000 and hit Return and the BX register is set for 2000, the length in hexadecimal of the EPROM file-to-be. You must next do the same thing to the CX register, so they both hold 2000 hex. Remember that the number will be different for different sized EPROMs, such as 1000 for a 2732 (4 Kbyte) and 4000 for a 27128 (16 Kbyte).

Once this is done, ready your disk and then use the WRITE command: W 2000. This tells Debug to record on disk the number of bytes set up in the BX and CX registers, starting from address 2000, and with the file name previously set up with the NAME command. You can now leave Debug with the Q for Quit command and then DIR the disk. You should see a file called BIOS.ROM with a length of 8192 bytes (or whatever). To confirm that you actually got what you think you got, type DEBUG B:BIOS.ROM. This will read the disk file back into address 100 as if it were

a .COM file. Then type D 100 and you should see a display of bytes identical to what you saw when you first looked at the EPROM.

If you have more than one EPROM, such as the four EPROMs containing ROM Basic, you can use the same procedure to back up each one of them. Just substitute the EPROM's socket address for FE00:0000 used for the Boot ROM. You might also want to back up the EPROMs from devices such as video adaptors. Probably the only practical way to do this is to physically remove the EPROM from the card, and temporarily insert it in one of the system board sockets, such as ROM-2 at address F400:0000. You can then follow the procedure outlined above. Trouble is, with the video card out of action, you won't have a screen while this is going on, so you'll have to use a friend's computer.

Getting the ROM-image disk file back into a new EPROM will probably be depend on your ingenuity, that is, who you can lean on. Many institutions and government departments have EPROM programmers that can work from MS-DOS disk files. Or ask someone in your user group. My own method is messy, but it works. I first use PC-ALIEN to transfer the ROM image file from the IBM disk to a Microbee disk. On the Microbee I use a CP/M command to read the disk file into the computer's memory. I then use the Microbee's Disk Monitor to record the memory area onto a cassette. The cassette is then played into another Microbee which contains the EPROM Programmer software (stored in an EPROM, no less!). The end result of all this is usually an EPROM that is identical to the one that had its image recorded so long ago. I could cut out a lot of messing about if I rewrote the Programmer software to work on the Disk Microbee. Maybe some day!

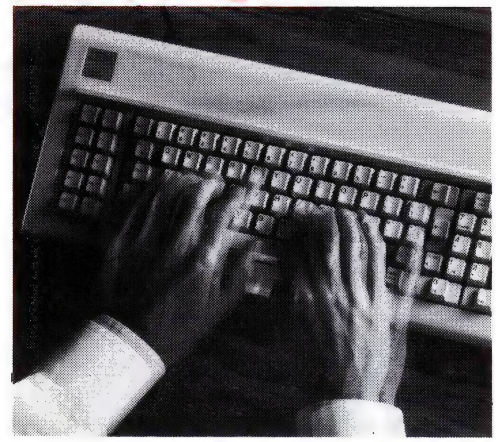
Original EPROM software

It's also possible, of course to cook up your own original EPROM software. I've done this on the Microbee, and I'd love to do it on the IBM as well when I get around to it. What the machine needs is a proper ROM-based monitor that will let you directly manipulate memory, read and write disk tracks, and so on. Much like Debug only in EPROM and therefore immune to the horrible crashes I sometimes inflict on the IBM. Such an EPROM could be used in one of the spare sockets.

With all this talk of Microbees perhaps we should quickly discuss how to back up the EPROMs in a ROM-based machine. Easy! Use the 'Bee's builtin monitor to record the appropriate memory address directly onto cassette. For a 1200 baud recording: D "BAS1" D 8000 9FFF. This will make a recording of the first of the Basic EPROMs at address 8000. The next one is at A000, and then you can do any application programs at C000 and so on.

Once you've backed up every EPROM you can get your hands on, stash the disk away in some safe space. Then, when your EPROMs start to fade away after ten years or so you can drag out the disk and run off some new ones. That is, if the disk hasn't disintegrated. □

YOUR FUTURE DEPENDS ON YOUR ABILITY TO TYPE



Typequick runs on most computers — IBM DOS, MS DOS, Apple, CP/M and Macintosh.

The computer revolution means that typing is now an essential skill. Only people who can use a keyboard properly will be able to progress in business, commerce and industry in the years ahead.

Learning with a good program on a PC is so much easier and quicker than using a book as the computer gives you instant feedback and creates intelligent remedial exercises to overcome any weaknesses. You could be touch typing in less than 10 hours.

This is achievable with Typequick

Developed in Australia, it is now one of the world's most acclaimed touch typing courses. There are more than 100,000 users worldwide.

Governments and educational institutions have adopted Typequick because of its speed of teaching and its motivation. It has been designed to cater for everyone from the absolute beginner to those who merely want to improve their speed and accuracy.

Simply put the disk into the drive, put your fingers on the keyboard and away you go.

Typequick, winner of the 1985 Australian Software Awards, runs on most PCs. Low cost per course site licences are also available.

TYPEQUICK™

CUT OUT THE COUPON AND ORDER TODAY!

Send coupon to Typequick Pty Ltd, 16 Cecil Street, Gordon 2072 or phone 498 7433. Please include $99. Please attach your Business Card.
/Enclosed is a cheque/money order for $.....Payable to TYPEQUICK
/Please credit my Bankcard/Mastercard .....
SIGNATURE
Expiry Date of Credit Card .....
Card No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
Name.....Title.....
Address.....Postcode.....
Computer Type.....Disk Capacity.....Disk Size.....
YC 11.88

The Compaq DeskPro 386s PC

Forget the corporate Gold Amex card – Paul Zucker will take the job if you give him a Compaq 386s.

The Compaq DeskPro 386s is a compact, fully-featured, high-performance PC. It's true productivity tool, and it incorporates all the latest features found on any other machine (with the exception of Micro Channel Architecture). It's the first PC to use Intel's new 80386SX microprocessor chip, sometimes called the P9.

The P9 is internally a 3-bit 80386 processor, but communicates with the outside world via a 16-bit (and 8-bit) bus. This gives a P9 PC a slightly slower than full 386 memory performance (though still at 16 MHz) but it is also more economical.

Since the bus is the same as in an AT machine, the 386s uses all existing expansion cards. Standard memory is 1 megabyte but this can be expanded to 13, in steps. In practice, only memory designed specifically for the 386s should be used.

The operating system of choice will usually be MS-DOS 3.31, but OS/2 is available from Compaq. Both disk sizes are packed with Compaq operating systems. Compaq supplies a number of specialised utilities, such as the Compaq Extended Memory Manager (CEMM), CACHE (a hard disk cache) and Keyboard Password (to restrict access to the machine and data).

A nice feature of the Compaq MODE command is the ability to slow the machine to any desired speed – not that you'd play games on it, of course (Flight Simulator III is an excellent game for those of you who won't be playing games on it! The VGA is great.)

Graphics

In a departure from Compaq standard, the graphics controller is built into the motherboard. In this case, standard VGA. It supports IBM VGA, EGA and CGA yet performs considerably faster than the IBM board. The monitors available are, a full colour (up to 640 *x* 480 resolution) and a monochrome with 640 *x* 480 graphics or 720 *x* 400 text.

A height of 149 mm, a width of 401 mm and a depth of 375 mm make this a small

Figure 1. *The Compaq 386s has front panel positions for one half-height tape drive and two third-height diskette drives. Both 5¼ (1.2 Mbyte) and 3½ inch (1.4 Mbyte) drives are available and may be mixed. Internally one or two hard disks can be fitted – the available sizes are 20 MByte (standard), 40 or 110 MByte. The machine supports IBM VGA, EGA and CGA; the monitors available are, a full colour (up to 640 x 480 resolution) and a monochrome with 640 x 480 graphics or 720 x 400 text.*

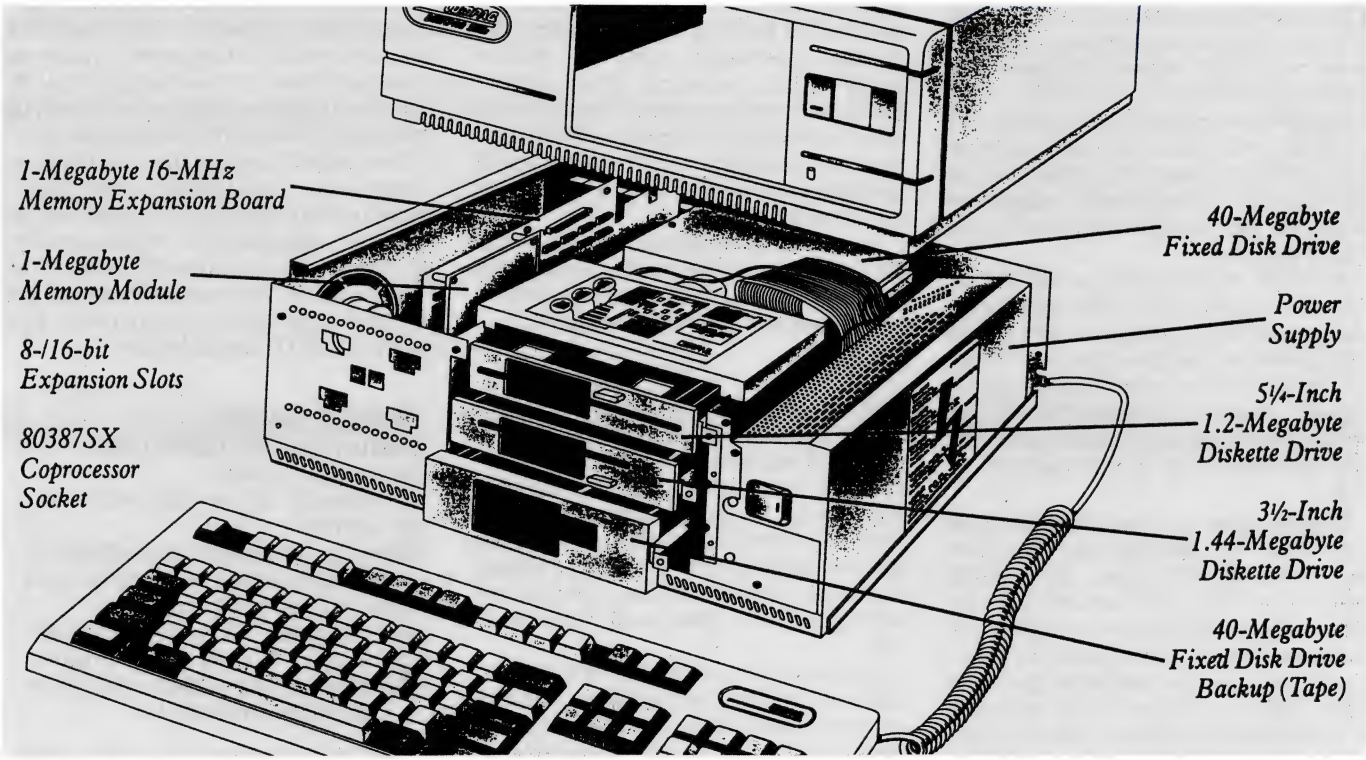


Figure 2. *The Compaq 386s features a new internal layout: the cards go on the left (front to back), the drives go in the centre, and the power supply lies on the right side, running from front to back. (The illustration is taken from Compaq's booklet on the machine.)*

machine indeed. Compaq's brief was to make a PC which could be used on a standard credenza or desk return, complete with keyboard. There are four spare expansion slots – each being full length AT size. The fifth slot is reserved for Compaq's high-speed-RAM expansion card.

Other features include a new implementation of the enhanced keyboard, left or right end cabling for the keyboard (but still a rear-panel connector), a mouse port (amazingly similar to IBM's!), a 9-pin serial port, a parallel port, a front panel power switch, rear panel keylock, a fixed-voltage power supply, and an optional 80387SX co-processor.

Performance

As you might have guessed, it's a rocket! It doesn't give much away to a full 16 MHz 386 machine. In practice, the 386s will feel at least twice as fast as a 12 MHz 286; it measures about 50 per cent faster and will average out at 30 per cent faster due to idle time and so on.

It's very important with a personal productivity PC that it feels fast and responsive. Waiting for your PC to recalculate a spreadsheet or re-draw a page of DTP is anti-productivity. A frustrated user is far from efficient. The hard disks are all very fast – better than 30 ms access time, and the VGA is also fast.

Compaqs (even the portables), have always lacked style. Solid, unbreakable grunt, yes, but style? Never! Until now, the attraction in owning a Compaq was it's name, performance and reliability. The 386s is a much better thought-out machine than its predecessors, but it still has a few of those 'armoured personnel carrier' touches about it. Sitting on the desk, the appearance is of a very compact unit, with the monitor being almost the same size as the footprint of the system unit. In fact, the keyboard is 69 mm or 17 per cent wider than the system unit; that's partly because the keyboard is a no-compromise, full featured unit, but it's also because of the new internal layout – see Figure 2.

A great deal of thought has gone into plastic mouldings, rounded corners, cable and connector and switch placements and so on. Taking part of a leaf from the PS/2 book, the 386s has a quick release cover – it's not as good as the PS/2 because it has finger wearing, multi-turn knurled nuts instead of the quick-twist IBM releases. Still, it's so much better than those Torx screws that the other Compaq models use (don't get your hopes up here either, as you still really need a Torx driver for the inside screws!).

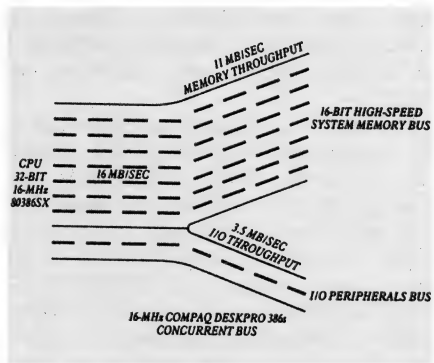


Figure 3. *Compaq's concurrent bus design separates the system memory bus, which typically makes up 95 per cent of data traffic, from the peripheral bus. By matching the performance of high speed memory with an appropriate 16 MHz bus throughput speed, the concurrent bus design in the DeskPro 386s provides a faster path than other computer systems that use one bus for all system components.*

RFI

For some strange reason (that I'm going to go into one day) we don't seem to worry very much about RFI (Radio Frequency Interference) in Australia. RFI is the interference produced in a radio or TV set from just about anything electrical. Computers are particularly bad because they operate at frequencies capable of producing lots and lots of power in the broadcast bands.

In the US, the FCC (like our federal department of Transport and Communications, without the transport!) comes down very heavily on machines that don't have RFI levels below a certain limit. Each US Comdex show is a field-day for FCC inspectors who run around giving marching orders to up to half of the machines on show.

Anyway, there is a basic difference between the PS/2 desktops and the Compaqs. While the PS/2s use a lot of stylish plastic (even for the chassis), Compaq sticks with solid sheet steel and great fortifications of RFI shielding and so on. As a result, Compaqs are remarkably quiet machines. (Did you know, by the way, that PCs are virtually useless for secure diplomatic use, because they emit so much information-rich RFI that very little is secret before a determined secret service?) Rumour has it, that the new 25 MHz PS/2 Model 70 from IBM was delayed simply because it failed to pass FCC RFI tests.

As always, Compaq manuals and disks are very good. Technical reference manuals are available for a price. Unlike most other manufacturers, Compaq and IBM always make newer versions of operating systems available for existing machines. I can't see Compaq ever deserting an owner.

You might be satisfied with the standard configuration, but with all those lovely add-ons, I want the lot. My poser's machine would have – 220 Mbyte of hard disk comprising two 110 Mbyte units which brings the cost to $20014, then I would add a tape backup drive for $3578, 12 MByte of RAM comprising three 4 Mbyte memory expansion daughterboards (giving a total of 13 Mbyte of RAM) at $4306 each, a Microsoft Mouse (this needs to follow the inport mouse standard) $280, a NetComm Trailblazer Modem ($3409 – unfortunately the internal model isn't available any more), an 80387sx co-processor ($1509), an Apple LaserWriter NTX ($12,995), and Microsoft Flight Simulator version 3 ($96). That would all hit my (taxed) poser's pocket for $54,961 – stylish; value for money; it's a Compaq.

Unfortunately, the 386s doesn't come with a mouse and there's nowhere for the keyboard to fold out of the way. And, the machines are hard to come by – the demand exceeds the supply. Other negative points are that the controller and case won't take four disk drives (some people are never satisfied); and it's not as quick to remove the cover or replace modules as it is with the PS/2.

I don't see how this sort of machine can fail. It has a definite market, it does the job very well, and the price is reasonable. Now if they only built a portable one. . . .

EISA

The existing bus (with its two connectors) provides 8- or 16-bit Input/Output for all expansion products. EISA (pronounced 'icer') adds a third bus connector, adjacent to the existing two, to take the I/O to 32bits. It also adds a number of features similar to IBM's Micro Channel Architecture (MCA) although the two are physically and operationally incompatible.

Almost all US and European PC manufacturers, as well as hardware, software and LAN manufacturers, have endorsed EISA and will be shipping EISA products. However, the first EISA machines won't be seen for a year.

Since EISA only really affects 32-bit machines such as the 80386 and the yet-to-be built 80486 PCs, the announcement won't directly affect users of traditional home, education and small business PCs. The effect will come from the fact that the existing standard now has a renewed life expectancy. Where some users were considering the purchase of PS/2 machines, and some manufacturers were considering producing them, it's now expected that PC standard business machines will continue to outsell PS/2s by three or four to one.

The added functionality of EISA includes high data transfer rates, intelligence on both the bus and connected peripherals, automatic or semi-automatic set-up of expansion boards on the EISA bus and so on. Any manufacturer can use the EISA standard on the payment of a single $US1000 registration fee.

Product Details

Product: Compaq DeskPro 386s
From: CCA Systems,
100 Harris St, Ultimo 2007 NSW
(02) 660 0077
Price: Compaq offer a large choice of basic configurations and options, but a 'standard machine' would be something like this: a 20 MByte hard disk, 3½ (or 5¼) inch disk, a colour VGA monitor, and 1 MByte RAM all for exactly $9000, including tax.

Note: Compaq has also announced the release of its DeskPro 386/20e which utilises the same new design introduced with the DeskPro 386s. The machine uses the 20 MHz Intel 80386 microprocessor and incorporates a cache memory controller with 32K of high-speed static RAM.

PC 'standards'

I SUPPOSE we've all got a friend who works for IBM. My friend Bruce does, and his favourite IBMism goes something like 'You just wouldn't believe how many things IBM has invented and just put aside until the time is right!' I've heard other IBMers say something like this. What they mean is that IBM has enough research laboratories, researchers and co-ordinators, to be able to lead all areas of technology, and plan and predict market needs and trends – I think it's something they put in the water out at Cumberland Forest, or perhaps a subliminal message on the Muzac!

For those of us on the outside, it is obvious that IBM has steered the 'PC standard' for the last six or so years, but looking at some of the less successful IBM products, we don't all agree that every product IBM deigns to release is just what the public wants.

To think that any one company can always dictate trends is a bit blinkered and the truth of the matter is that most companies have sufficient contingency plans to quickly follow trends set by others.

Just look at some of the changes over the past few years: 360 kilobyte disks have become 1.2 megabyte disks; CGA gave way to EGA graphics; the 8088 was replaced by the 80286 processor; and recently, especially with the introduction of PS/2, PC architecture has been superseded by Micro Channel Architecture; 5¼ inch disks are giving way to 3½ inch; EGA is old hat, now it's VGA graphics; the 80286 has been supplanted by the 80386; we've seen the move from the traditional, 5-Phillips head screw case to the quick disassemble variety; and the need to use a serial port for a mouse has gone with the appearance of a dedicated mouse port.

Apart from IBM, the company most responsible for developing the PC standard is Compaq, and, like IBM, Compaq does develop (and put into storage) new machines and options that it may never need to release. Compaq has slipped in a few changes over the last year: noticeably VGA and 3½ inch disk options, but until the release of

the 386s, there was nothing to combat the yuppiness of IBM's PS/2 range. Released under the shadow of Compaq's new 25 MHz 80386 blockbuster, the 386s is a much more important machine. Why important?

It's important for two reasons: it's the first of Compaq's 'new style' PCs and it introduces a class or level of PC never seen before.

New style

Although Compaq wouldn't admit it, the 386s owes a lot to the PS/2. Adjectives to describe both include clean, round, modular, compact, self contained, usable, and so on. We could compare the list of features that the 386s has borrowed from the PS/2s but it isn't just a copy – it's a new style for Compaq which will probably become the standard in the next year or so. It's especially not a copy when you consider that it's a more versatile design than the new IBMs. It takes some of the better features from the old and the new and creates a usable balance.

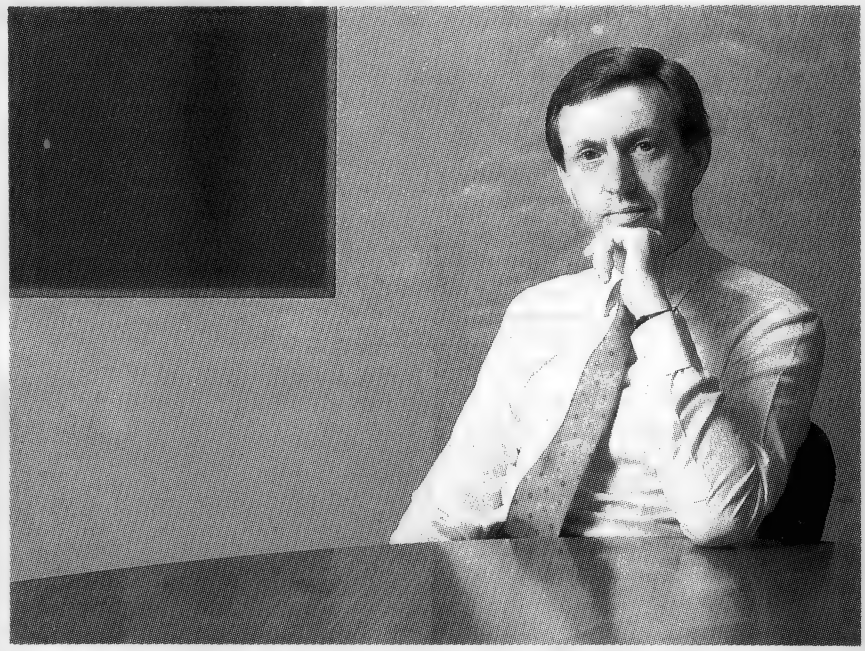
New class

The 386s introduces a new class of PC because it addresses a market never fully catered for until now. The market is the 'power/productivity tool' user. Examples are the Lotus 1-2-3 user who increasingly needs more speed and capacity, or the person who uses a PC for desktop publishing or graphics. These are generally high-productivity, standalone applications, with the PC and peripherals dedicated to just this one user. A system price of $10 to 25,000 is not uncommon.

Until now, the type of machine chosen for this application was either a fast 80286 (such as an Epson, NEC, or IBM Model 50) or an 80386 (such as a Compaq or IBM.) At about 50 per cent faster than the fast '286 machines, and not a great deal slower than the full '386 models, these P9 machines are already proving a success in this new market class. □

A typical, hard-working techo!

WE ASKED Paul Zucker to interview Ian Harvey of Compaq to learn a bit more about one of the most respected Australian computer 'technologists' – Harvey has been Technical Director of CCA Systems (Compaq) since its inception in Australia, in mid-1985. Prior to this he was with IBM for 16 years, in a number of technical roles including systems engineering, product management and finally as a senior technical specialist.



Harvey describes himself as 'a typical, hard-working techo!' Why did he join Compaq and leave IBM? ***If there were no Compaq, I'd probably still be with IBM although that company has lost many of its forward thinking, entrepreneurial people. Only Compaq, IBM and Apple are bringing new technology to the market and Compaq's ability to introduce technology swiftly ranks it best.***

Is he a PC user? ***I like to think of myself as a typical power PC user.*** He uses a Compaq Portable III with 2.5 Mbyte of RAM, a Banyan network card and a Compaq internal modem; his printer is an IBM ProPrinter XL. He doesn't use an external colour screen, finding the internal monochrome, plasma screen sufficient for his business applications. His software of choice is Lotus 1-2-3, WordPerfect, Harvard Graphics, Paradox and a communications package (note: he does *not* use Flight Simulator).

Harvey accesses the Compaq international network via Keylink. He takes his portable home sometimes, but never takes it away on business. He almost never uses a PC for recreation although occasionally his kids use the portable to play games. ***I will always be an avid PC user because I can see the benefits in my own productivity and effectiveness.***

How does he see Compaq in Australia, and his role with the company? ***I enjoy being involved with technology leaders. Australia generally suffers from being 10,000 miles from where the action happens and the end-users, particularly, don't often get a chance to share their fears and wishes with manufacturers. PC companies in Australia tend to be marketing or sales arms, rather than an integral part of the parent company. I enjoy trying to help the Australian marketplace understand where technology is going. And, I enjoy the feedback I get from talking to users, such as at user group meetings. Marketers often mislead or fail to fully explain important facts.***

At Compaq in Australia, we are fully briefed by our international headquarters in Houston, Texas, as to planned products and announcements. We're never caught unprepared by a US release. CCA Systems holds a special reputation within Compaq worldwide, for service and marketing

'I will always be an avid PC user because I can see the benefits in my own productivity and effectiveness.'
– Ian Harvey, Technical Director of Compaq.

Will Compaq develop hardware or software in Australia? ***Nothing's impossible in such a rapidly expanding company – it's a very real possibility.***

Will we see Compaqs used more in small business? ***Compaq sells its products into the workstation market. We will become more and more relevant in the small business market as users come to understand the value of service, reliability and upward compatibility.***

AGC finds a winner with President

After much searching, AGC decided on President's Desktop Publishing System. Along the way, she picked up a few hints for large companies . . . .

President's Desktop Publishing System installed at the AGC. On the floor is the President 386 Vertical Server with twin 5.25 inch Bernoulli removable hard disks. On the desk, from left to right, AVR flatbed scanner, Canon LPB-8II laser printer, CGA display monitor with President's opening menu, Verticom double page display monitor for Ventura or MegaScan software, mouse and keyboard.

THE AUTRALIAN Guarantee Corporation (AGC) decided to have a look at desktop publishing, to see if it could be used effectively for preparation of technical manuals and the hundreds of forms the company uses for data collection. Ngaire Chant was given the job of finding the most appropriate desktop publishing system for AGC, and after an extensive look at various software packages and hardware from a number of companies (including some big names), she chose President's Desktop Publishing System. The result? Nothing short of a resounding success!

Ngaire has a background in computing and editing, and now works for AGC as thier inhouse Editor. As with any computing application, it pays to consider carefully and thoroughly, at what it is you want to achieve before rushing out to buy anything. In this case, AGC required a DTP system that could handle the design and layout of forms, with the ability to make alterations to any one of them quickly.

The system also had to be able to handle design and layout of technical manuals, with input from Multimate word processing files, and the ability to quickly add simple graphics as required. Technical manuals are used by personnel within various divisions of the company for instruction on procedures for the collection of information, the use of computer terminals, data processing and the like. The manuals have to be precise, easy to read, accurate, and able to be accessed quickly.

Other considerations that Ngaire took into account were the need to have an indexing system that could accept changes easily; the ability to scan in forms and other documents (and resize them at will); the inclusion of company logos; and the ability to print out at any time a copy for proofing. Above all, it had to be fast, and it had to be able to handle a high level of presentation suitable to the corporate image.

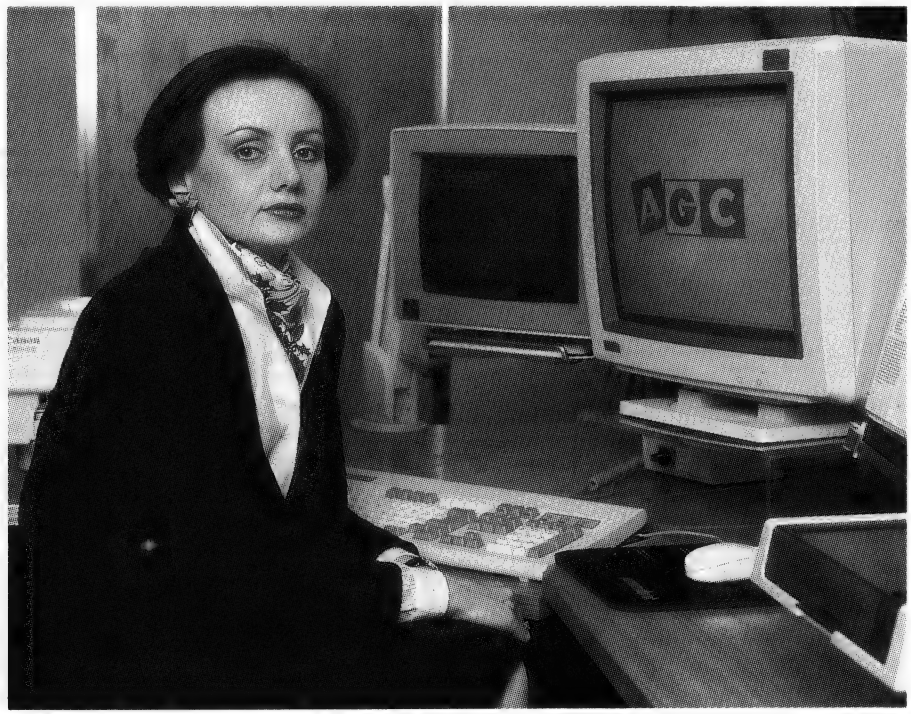
PageMaker *vs* Ventura

Ngaire chose Ventura Publisher over PageMaker for the PC because it handles text intensive documents very well. It can also automatically compile indexes and complicated tables of contents (some

AGC manuals have thirty chapters with sub levels within each chapter – imagine having to do them manually). Ventura can also string chapters together, gives tighter control over typographic leading, and handles global changes to text. For Ngaire, it is important to be able to obtain a quick overview of what a document is going to look like, and if it needs changing, that should be easily accomplished. PageMaker, according to Ngaire, is better at graphics-intensive work such as newsletters, and high quality illustrated documents that do not incorporate large chunks of text.

Matt Whelan reviewed these DTP software products and came to much the same conclusion in *Your Computer's* June '87 issue; not entirely coincidentally, Ventura was awarded 1988 Software Product of the Year in YC's Personal Computer of the Year Awards.

The release of PageMaker 3.0 has changed things a little, but it's still a package you would use if you don't require indexing, and if the emphasis is on single page layouts. For Ngaire, Ventura was the obvious choice for AGC's requirements.



Ngaire Chant, Editor with the Australian Guarantee Corporation.

Hardware

Having sorted out the software requirements, Ngaire set about looking at hardware. She was looking for a system that could input scanned images (forms, simple graphics and logos); alter them, and output to a laser printer or typesetter. The system had to be able to accept Multimate files from PCs, since this was the package in use throughout AGC's various divisions. Over a period of nearly 12 months she looked extensively at various big name computer companies and what they had to offer, went to trade exhibitions, read DTP magazines, and looked at new products – and then the penny dropped.

Ngaire found that when she was dealing with small, specialist companies that were involved in and committed to DTP, they knew what *she* was talking about, and they knew what *they* were talking about, whereas when she went to some of the big guns (we are not mentioning any names here, but she had the same experience several times), she found that the people she was dealing with did not have sufficient knowledge about their own products, let alone have the perspective to allow for setting up a system that might have components from several suppliers (almost an inevitability with desktop publishing systems, it seems). The main problem seemed to be a lack of communication between sales and technical staff.

Enter President. Ngaire found that with a relatively small company, such as President, whoever she spoke to had the same commitment and product knowledge, and they were flexible enough to find creative solutions to problems as they arose. They were open enough to allow for the inclusion of products from other suppliers, and in fact were prepared to do a lot of the running around, and testing various combinations of hardware and software until they had come up with a solution.

As a result, AGC now have an advanced desktop publishing system, with strong support and commitment from President, at what a reasonable cost.

The President 386 VS Desktop Publishing System installation for AGC has at its heart a President 386 VS (Vertical Standing) PC running at 16 MHz. This provides the essential processing speed needed for any desktop publishing application. The 386 has 5¼ inch 1.2 megabyte and 3½ inch 1.44 megabyte floppy drives; a fast 40 Mbyte internal hard disk; and two 5¼ inch Bernoulli removable 20 Mbyte hard disks for data storage and back-ups.

The 386 is linked to an Advanced Vision Research (AVR) flatbed scanner via a MegaBuffer card which features its own 1.3 Mbyte of RAM. The scanner can read an A4-sized bit-image page into the MegaBuffer in a remarkable 9 seconds, maximum – that's fast! The image can then be manipulated and edited down to pixel level using MegaScan software, imported into Ventura, or printed out on either of two laser printers, one a Canon LPB-8II, the other an AST TurboLaser/PS which has the PostScript page description language on board. The AST Turbolaser is on hire as a temporary step – President are testing a software package called Softscribe which converts a page saved as a PostScript file into bit-map form, so that it can be printed out on an ordinary Canon-engined printer. Furthermore, once a PostScript file is converted, it can be stored in bit-map form, and can be printed out from the MegaBuffer at any time in a few seconds! (Look out for a review of this exciting product in *YC* in the near future.)

Best of both worlds!

The system President has set up for AGC has the best of both worlds: the speed and flexibility of the scanner and Canon-engined laser for fast printing of bit-mapped images that would take a long time under PostScript; and the benefits of PostScript in the AST laser printer (and by the time you read this, in the form of Soft-

AGC STANDARD PRACTICE INSTRUCTIONS

CONS CONTENTS Page 1
1.4.88

TABLE OF CONTENTS

CONSUMER ACCEPTANCE

100	ACCEPTANCE INTRODUCTION	
	Overview	1.
	Application Register	2.
	Rate Charts	3.
	Insurance	4.
	Applications - Cautionary Note	5.
	Approval	6.
	Rejections	7.
	Withdrawn Presubmission/Application	8.
	Collateral Security	9.
105	CREDIT SCORING	
	What is Credit Scoring	1.
	Verifying Score Calculation	2.
110	MOTOR	
	Applications - Cautionary Note	1.
	Motor Retail Presubmissions	2.
	Credit Scoring Instructions	3.
	Approval	4.
	Security	5.
	Processing a Motor Transaction	6.
	Checking Documents	7.
	Irregular Documents	8.
	Direct Business	9.
	Boats	10.
	Credit Scoring Instructions - Business Purposes	11.
	Substitute Security - Credit Act Accounts	12.
115	PERSONAL LOANS AND LOAN CONTRACTS	
	Applications - Cautionary Note	1.
	Applications - Personal Loans	2.
	Applications - Rewritten Accounts	3.
	Applications - Home Deposit Assistance	4.
	Credit Scoring Instructions	5.
	Personal Loans for Business Purposes	6.
	Security	7.
	Approval	8.
	Rejections	9.
	Withdrawn Applications	10.
	Decision	11.
	Completion of Worksheet	12.
	Documentation	13.
	Document Details/Execution	14.
	Effecting Payment	15.
	Property Domestic Loans	16.
	Substitute Security - Credit Act Accounts	17.

NSW New Business Motor — Contents I

Contents

Page

1. Introduction
1.1 Overview 1-1
1.2 Contracts 1-2
1.3 Direct Business 1-3
1.3.1 Private Vendors 1-3
1.3.2 Non AGC Dealers 1-10

2. Quotes
2.1 Manual Quotes 2-1
2.2 Computer Quotes 2-3
2.3 Annual Percentage Rate 2-10
2.4 Rate Approval 2-12

3. Decision Making
3.1 Manual Decisions 3-1
3.1.1 Applications 3-1
3.1.2 Credit Scoring 3-9
3.1.3 Credit Checking 3-11
3.1.4 Capacity Assessment 3-15
3.1.5 Approval 3-16
3.1.7 Overrides 3-20
3.1.8 Rejection 3-21
3.1.9 Closure and Filing 3-22
3.2 VALES Decisions 3-23
3.2.1 Application Input 3-23
3.2.2 Evaluation Response 3-29
3.2.3 Phase II Reports 3-30
3.2.4 Approved 3-32
3.2.5 Conditioned 3-35
3.2.6 Referred 3-37

AGC Standard Practice Instructions — Issue Date: 15.9.88

Figure 1. *Before (left) and after (right). This is a draft copy from one of the manuals. The difference that Desktop Publishing has made to the layout and readability is significant.*

scribe conversion) for flexibilty of type sizing, graphics control and page design for which PostScript is renown.

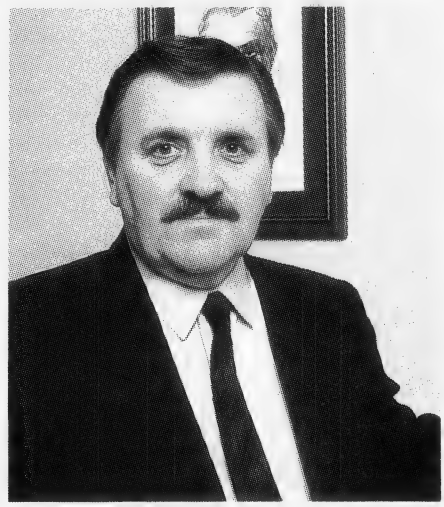
To explain this in more detail, the scanner inputs information into the MegaBuffer in a bit-mapped form at 300 dots per inch. In effect, the MegaBuffer has replaced the printer controller inside the Canon printer, so that when you send a command to print, it does so instantly, and the bit-mapped image is fed from the MegaBuffer to the Canon printer (so it is possible to use the combination as a photocopier as well). Fonts within the MegaScan software are also in bit-mapped form, which take up quite a lot of memory space.

PostScript holds its fonts and typestyles in the form of mathematical descriptions. It is therefore possible to scale them to any size, rotate them, fan them and generally do many things you couldn't achieve with bit-mapped fonts. PostScript is not so good at handling bit-mapped graphics, so an image prints a lot slower. (see Matt Whelan's article on the President Desktop Publishing System in our June '87 issue – ther have been numerous enhancement since then, but the sytem is essentially the same – and his discussion of PostScript in August '86.)

Other pieces of hardware in the system include a CGA display monitor for menu selection (President supplied four menu screens for selection of software, formatting disks and so on), a Verticom display card and 1280 *x* 960 double page, monochrome monitor for page layout, and a mouse. The Verticom monitor allows viewing of facing A4-sizes pages (a 'double

Cooper, founder and managing director of President Computers, *entered the office automation field when he started President Typewriters nineteen years ago. Cooper's was the first company in Australia to manufacture electric typewriters as well as the first to assemble electronic calculators. The list of President's 'firsts' continued when the company began selling the first IBM compatible in Australia, a full year before IBM released the original PC here.*

Cooper and his family (his wife Pauline and two of their children, Mark and Joanne, also work at the company's Hornsby NSW headquarters) have seen President Computers grow into one of the foremost suppliers of desktop publishing



systems in Australia. The company also markets a full range of IBM-compatible computers, from the Portable LCD 88 to the tower-model 386VS – all machines that have been well-accepted into government, education and corporate markets.

The latest addition to the range is the Graduate – an innovative machine that uses a CPU card instead of a motherboard. This means that the purchaser can start with a low-priced XT-type machine with a paper white monitor and upgrade it to an AT or 386 machine with a VGA monitor as needed.

When asked what the future held for his company, Cooper replied: 'The name says it all: President means to lead and we're doing that with pride.'

page spread') in a document under Ventura or the MegaScan software. This is important for quick assessment of readability and clarity of design of the technical manuals.

Software supplied by President includes Dos 3.3, Ventura 1.1, Harvard Graphics, Multimate Advantage II, MegaScan, MegaRead (Optical Character Recognition for the scanner), PC Paintbrush, Form Maker, Artwork Graphics, and VP Toolbox. Corel Headline, a package for creating interesting headings using PostScript was supplied by AGC and President included it in their menu screen. With the Softscribe PostScript conversion installed, the system will be a full featured hardware/software combination that can output to a single Canon-engined laser printer from the MegaBuffer, with the option of using files that are in either bit-mapped or PostScript form.

The results?

The results speak for themselves – see Figure 1. Before the desktop publishing system was installed, technical manuals were produced using word processing techniques. They were bulky, and difficult to access; with underlining, indents, and dashes as the only features available for headings, they looked quite boring. Under the new system, Ngaire has reduced their size (to save on paper and freight), improved the readability through the creative use of different type densities, and generally cleaned up the presentation to make it more suitable to the workings of a large corporation. The forms can be proofed, checked, and altered without the need for them to make return trips to the typesetter.

The system has been in use for several months, and apart from some minor rearrangement of components, there has been no down-time. President were happy to set up and test the system at their own premises before delivery to make sure everything worked. Small but important touches such as the labelling of drives on the 386 to prevent accidental formatting, and labelling of cables so that if the system is moved it, can be re-connected all help to gain added respect for President.

Ngaire is happy; AGC is happy; and I bet President is happy with the results of this system installation. It all goes to show that a little attention to detail and communication between sales and technical staff can make a difference that is felt at the most important level: that of the customer! □

OUTSTANDING SOFTWARE

For IBM PC's and Compatibles

At last FREE-SOFT ® International is here! We have more than 900 programmes in our international library, you can get any disk for $12, and if you join FREE-SOFT NETWORK ® it will be $10 only per disk! plus getting our SOFT-LINE ® Newsletter.. full of tips to help you get the most out of your PC! plus receiving regularly our SUPER-SOFT ® sheet listing in details the best 10 software programmes available in our library! plus SPECIAL PRIVILEGED STATUS ® .. you will have advance access to the latest Public Domain and User-Supported software programmes before its release to the public! plus having 24 hours, 7 days hot line to order from! Membership in the NETWORK is $39 annually! So, may we say.. WELCOME to the world of FREE-SOFT.

0125 PC-PROFESSOR — Your computer will teach you all about BASIC programming in colour!
0180 PC-TUTOR — Tutor will teach you all what you need to know about Your PC and its DOS!
1000 PC-WRITE + — Super word processor, comes in 2 diskettes, this is part 1, full-featured package with 55000 word dictionary in colour, even support a Laser printer.
1001 PC-WRITE + — Part 2 as above.
0054 SIDE-WRITER — It will allow your printer to print SIDEWAYS on paper! a must for lotus users!
0051 EZ-FORMS — allows you to generate master forms tailored to your need. Super for business.
0028 PC-MUSICIAN — Great programme, you can create and play songs on your PC!
1003 PC-FILE + — Just when you thought PC-FILE couldn't get any better File + create new standard in Database managers, comes in 2 diskettes, this is part 1, it is easier, faster and more. . . more powerful.
1004 PC-FILE + — Part 2 as above.
0130 PERSONAL FINANCE MANAGER — Good personal accounting system. You can keep track of all household money matters from Cheque account to Investments.

0148 PC-TOUCH — Your Computer will be your typing tutor, let you go at your own pace and keep track of how well you are doing.

0147 SLIDE — Images can be created, edited, saved, displayed and printed using the programme. Handy for Disktop Publisher.

SPECIAL ANY 5 DISKS PLUS 1 YEAR MEMBERSHIP ONLY $39

0172 THE LIBRARY for lotus — 20 Super worksheets for lotus 123, from Cheque Book balancer. Cash Flow Manager to New Venture Budget!
0197 HARD DISK UTILITIES — Super collection of Hard disk Utilities from a utility tells you which files have not been backed up to the one helps you create sub-directory no one knows about but you!
0174 KID'S WORD PROCESSOR — Excellent word processor written for Children (and adult too!) in super colour and sound, features graphic menus and the lot!
0175 PC-DRAW # 1 — A must as a part of your Desktop Publishing Library, it is a combination of programmes, providing keyboard, screen drawing, graphics printing and slide show capability.
0176 PC-DRAW # 2 — A selection of drawings and pictures made by PC-Draw #1, plus a super slide show, you must have PC-DRAW #1 to be able to use it.
0201 PROCOMM — The professional communications programme, if you have a Modem then you need Procomm.
0046 PTROOPER — A game, in Super Colour, keep the invading paratroopers from landing in your country!
0049 PC-CHESS — Very good Chess game, you can play against the computer or a friend!
0065 AFGHAN-WAR — Good WAR GAME, in colour based on Afghanistan War.
0157 LANDER — In excellent graphics and colour, can you land a space ship on a pad without crashing?
0165 SPACEWAR — Arcade game in colour and graphics, combines the best features of Asteiods and Startrek with a few tricks of its own!

YES! I want the best! Send me my MEMBERSHIP KIT in FREE-SOFT NETWORK , plus the following diskettes. (write catalogue # of any FIVE of the above list)

At your SPECIAL OFFER for $39
Plus, postage & handling ..... $ 3
(if you want more than five diskettes, just add for each extra diskette $10)

As per ☐ My Cheque ☐ Bankcard ☐ Visa ☐ MasterCard ☐ Am. Express

Card No. ..... Exp. Date .....

Signature ..... Name .....

Address ..... Sub .....

State ..... Postcode ..... Phone .....

Post to . . . (No stamps Needed) . . . FREE POST No. (1),
Or by using our 24 hrs, FREE-SOFT International,
7 days a week, P.O. Box 398,
HOTLINE (03) 859 4697 NORTH BALWYN, VIC. 3104.

FREE-SOFT INTERNATIONAL LIBRARY

Amiga Graphics —

The Amiga computer is well suited to graphics applications for artists, commercial users, or just for fun, as Robert Thirlwell found with these four paint packages and a digitizer.

LET'S CONCEDE something right now: graphics software running on the Amiga is enjoyable, amusing, diverting, and fun! For anyone with a yen for colour, doodling, experimenting, combining images into an electronic collage, special effects, or just playing around for the hell of it, go no further: This is it. But there is a serious side as well, and the Amiga has become a force in commercial graphics and broadcast quality video production.

Graphics software for the Amiga has been sophisticated right from the beginning, with the initial version of Deluxe Paint put together by Electronic Arts in time for the Amiga's first appearance. Other graphics packages such as Digi-View, Digi-Paint, Photon Paint, Express Paint, Butcher and Pixmate have expanded the Amiga's capabilities.

The latest to appear is Deluxe Photolab, from Electronic Arts, which combines the features of Deluxe Paint and Digi-Paint, and allows many graphics screens to be stored in RAM at the one time, and graphics pictures that are limited in size by total available RAM, rather than 'chip' RAM – see Gregg Faulkner's 'Your Amiga' for more on this.

Desktop video that began with simple animation has been developed into serious studio applications, with the Amiga providing broadcast quality video frame capture, titling and special effects. Em-

a serious playground

manuel Stephano Associates in Canberra use Amigas for making television advertisements and corporate videos, and Artscape in Sydney produces graphic art at a lower cost than companies using traditional methods. Amigas are also used at the Swinburne Institute in their computer animation post-graduate course, and there are many instances in the US and Europe where Amigas are used for animation, story-boarding, colour separations, concept development, and architectural planning.

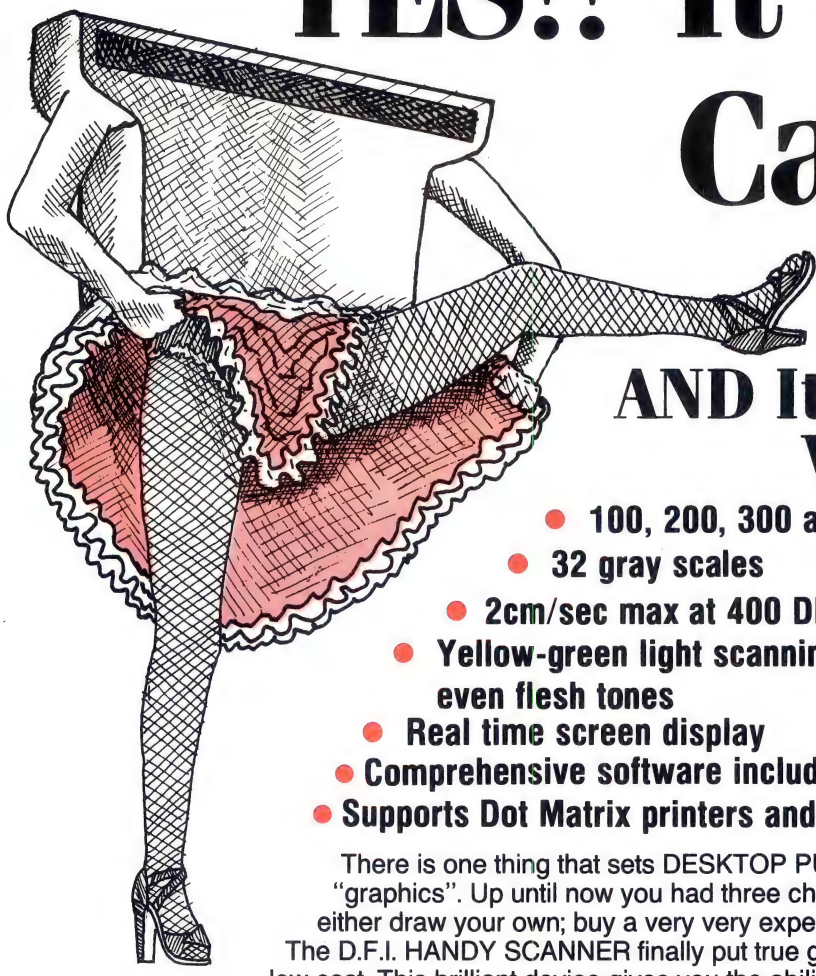
Other niche market applications include the use of computer graphics linked to interactive displays and and process flow information. BHP Steel at Newcastle uses Amigas for monitoring and production control with specially designed interfaces, and the Powerhouse Museum uses Amigas for some of their interactive displays – watch for more on Amigas and the Powerhouse in December.

There are several advantages in using Amigas rather than IBM compatibles or Macintoshes for graphics production. The most obvious one is the low cost of setting up a system: there is no need to purchase colour display boards or specialist monitors because the standard Amiga has graphics capabilities already built-in (refer to the separated item on the Amiga for its configuration). With the standard IFF file format, images can be easily transported between different paint packages, or into other applications such as animation, video, or graphics databases.

The graphics software reviewed here gives good value for money, with prices ranging from $129 to $399. The packages are all menu-driven, using a mouse, and most commands have convenient keyboard equivalents. If you have trouble drawing with a rodent, you can purchase a graphics tablet which combines a stylus with a pressure sensitive pad. But you don't have to be an artist: these packages can be used with very little drawing, especially if you use digitized images from Digi-View, which allows a photographic image to be imported into the paint program. You can then get away with some pixel editing (removing unwanted pixel colours) from regions of a picture using the magnify tool.

Most graphics packages for the Amiga will run with only 512 Kbyte of RAM

YES!! It Certainly Can SCAN —SCAN



AND It's The VERY VERY Latest Model!!

- 100, 200, 300 and 400 DPI selectable
- 32 gray scales
- 2cm/sec max at 400 DPI
- Yellow-green light scanning gives sharper pictures even flesh tones
- Real time screen display
- Comprehensive software included in package
- Supports Dot Matrix printers and laser

There is one thing that sets DESKTOP PUBLISHING apart from word processing — "graphics". Up until now you had three choices if you wanted to integrate text and graphics: either draw your own; buy a very very expensive scanner; or do without.
The D.F.I. HANDY SCANNER finally put true graphics power into your hands at an unbelievably low cost. This brilliant device gives you the ability to read a document into your computer's memory and then use it in the DESKTOP PUBLISHING EDITOR, VENTURA, PACEMAKER, GEM PAINT and PC PAINTBRUSH. You can not only scan pictures, photographs, line drawings, maps, in fact any printed material. You can also read text and the DS 3000 is OCR **compatible!!**

The free **HALO DESKTOP PUBLISHING EDITOR** is a fantastic program in its own right. It supports multi input devices:

- **Keyboard**
- **Mouse**
- **Lightpen**
- **Digitizer**

- View and edit entire page or section thereof
- Powerful text manipulation
- Widest variety of type styles
- Underlining, filling, drop shadowing, titles etc
- Innumerable tools for sophisticated graphics

Available from: Microcomputer Spot, Grace Bros (selected stores), Actcom Computer Centre Belconnen, A.C.T. Harvey Norman (selected stores), Chandlers (selected stores), Clayfield Computers QLD, Computech Braddon A.C.T. and leading computer retailers throughout Australia.

Pactronics

Best quality, best price and best service — insist on products from Pactronics "the user-friendly company".

N.S.W: Pactronics Pty Ltd, 33-35 Alleyne Street, Chatswood. (02) 407 0261
VICTORIA: Pactronics Pty Ltd, 51-55 Johnston Street, Fitzroy. (03) 419 4644
QUEENSLAND: Pactronics Pty Ltd, 12 Stratton St, Newstead, 4006. (07) 854 1982
SOUTH AUSTRALIA: Baringa Pty Ltd, (08) 271 1066 ext. 6132
WESTERN AUSTRALIA: Pactronics W.A. Unit 13, (Rear) 113 High Rd, Willeton 6155. (09) 354 1122

memory, but to get the most out of high resolution colour pictures, at least one megabyte is necessary. These packages produce still images which can be output to a colour printer, a Polaroid Palette slide generator with Image Master software – distributed by Neriki Australia, (02) 957 4778 – transferred to desktop publishing software, photographed directly from the screen, or used as artwork for animation and video applications (with a Neriki genlock and Pro Video Plus software).

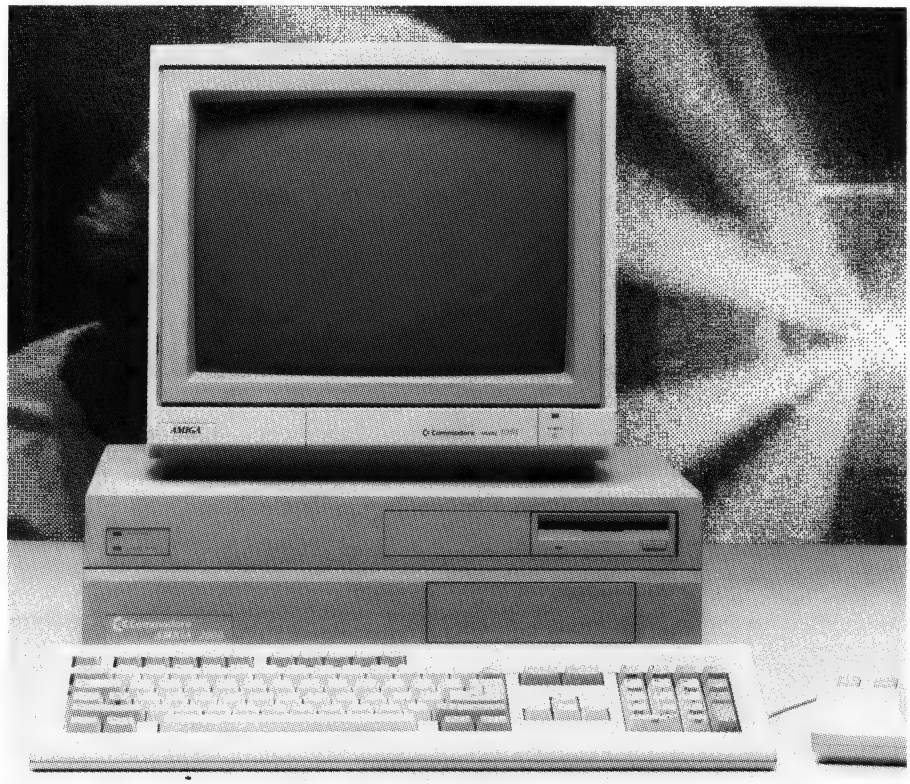
Deluxe Paint

Deluxe Paint II is the polished version of the original Deluxe Paint, with extra features that include colour Hi-Res and perspective fill. The program was written by Dan Silva, who worked on graphics programs for Xerox, NASA, and Lucasfilm before joining Electronic Arts in 1983. Dan had the ingenious idea that a brush (the selected cursor that is used to 'paint' onto the screen) could be any size, texture, colour or shape. What this means is that the user can select a part of a picture, pick it up with the mouse pointer, move it around over the picture, and 'paste' the brush image anywhere. Brushes can be sized, flipped, rotated, squashed, expanded, bent and otherwise manipulated. You can paint with a brush, moving it around on the screen with the right mouse button pressed, and it will paint a multicoloured picture like that in Figure 1. And, you can save a brush and use it later with another picture.

Deluxe Paint II can be run in several page sizes up to a maximum of 1008 *x* 1024 pixels. Screen formats range from 320 *x* 256 (Lo-Res) to 640 *x* 512 interlaced (Hi-Res). There is provision for overscan, which gives a full sized picture suitable for video recording. The maximum number of colours the program can use is 32 in Low-Res, and 16 in Hi-Res selected from a palette of 4096. The program takes up around 200K of memory, and it uses any extra memory for spare screens, stencil creation, and large brushes.

Deluxe Paint II has a number of features that are found in other graphic paint programs such as background/foreground colour selection, magnify, grid, fill, straight line, curve and freehand drawing. All of these perform very well, but the real delight within DP II are the extras that make life easier for the computer artist. For instance, the fill tool can be selected in it's default mode with the *left* mouse button from the toolbox menu. Then if you click within an enclosed shape, the shape will fill with the current foreground colour. If, however, the fill tool is selected with the *right* button, a Requester appears – see Figure 2. A selection can then be made for pattern fill, pattern from brush, solid or perspective fill, and gradient fill, which fills a shape with a colour range, say from light blue to dark blue. You can also adjust the dither (the amount of random overlap between shades) of gradient fills, and select the direction of gradient fill (horizontal, vertical, or three-dimensional effect).

The Mode menu allows painting in smear, shade, smooth, blend, matte, colour, replace, and cycle modes. Text can be added to a picture, with cutting and pasting. Backgrounds can be frozen to allow free experimentation over the top. Stencils can be made that will prevent selected colours from being painted over. A 'spare' screen can be used to store custom brushes or another picture. As with any paint package worth its salt, experimentation is not only advised, it is downright necessary; and if you make a mistake (and you will), there is the comfort of knowing that the 'undo' function will remove your last stroke.



The Amiga has become a force in commercial graphics and broadcast quality video production.

The manual for Deluxe Paint II is one of the best I have seen. All of the information is presented in a clear, easy to understand way, and there are four tutorials to help get started. Deluxe Paint II a real delight to use on the Amiga!

Digi-View

With the introduction of Digi-View, New Tek gained infinite respect and a good share of the market with the first video colour digitizer for the Amiga. Digi-View consists of software, a colour wheel and a small piece of hardware that plugs into the parallel port, with an RCA socket that accepts a video signal. Using a black and white video camera (purchased separately), it is possible to convert a colour picture into a colour digitized image in the Amiga IFF file format – see Figure 3. This is achieved by taking three separate samples of the image through each of red, green and blue sections of the wheel which takes a about 30 seconds.

With judicious use of lighting and a very still subject, Digi-View converts the three samples into a combined RGB (Red Green Blue) colour image. Software controls allow the user to easily alter the bright-

Amiga – the hardware

The Amiga makes use of a Motorola 68000 chip as its Central Processing Unit (CPU). It also has three smaller, specialist chips (or co-processors) that take care of video display and audio functions (these chips were named Denise, Gary, and Agnesby the Amiga development team). Everything displayed on the monitor, including text characters, are in the form of bit-mapped graphics. The graphics display is controlled by a 'blitter' which updates the screen, and a combination of 'bobs' and 'sprites' that allow discrete graphic shapes to move about across the screen.

The amount of memory that can be addressed by programs for graphics display is 512K of 'chip' memory; up to 8 Megabytes of 'fast' RAM can be used for program memory and expanded RAM. The Amiga is multi-tasking, which means that several programs can be running as background tasks at the same time, with CPU access allowed on a priority basis. PAL Screen resolutions range from low resolution 320 *x* 256 to 640 *x* 512 high resolution, interlaced (or NTSC 320 *x* 200 to 640 *x* 400). The number of colours displayed range from a maximum of 4096 in Hold And Modify (HAM) mode (320 *x* 250 or 320 *x* 512) to 64 (Half-Brite mode), 32 (Lo-Res), and 16 (Hi-Res).

Most of the graphics software products share the Interleaved File Format (IFF), as pioneered by Electronic Arts in 1985 and subsequently adopted by Commodore and other software manufacturers. The format allows images to be freely swapped around between applications. The IFF standard supports graphics, sound, numeric data and text – this is a contrast to the IBM world where compatibility problems are often a nuisance.

ness, contrast, palette and camera settings to achieve optimum results. The image can be saved as an RGB file (raw data), HAM (Hold and Modify) 4096 colours, in 320 *x* 256 or 320 *x* 512, high resolution in 16 colours (if you have around 1.5 Meg of RAM), and low resolution in 32 colours. Images can also be saved in black and white.

Why use a monochrome video camera to get a colour picture? Simply because you get a much better result since monochrome cameras have a higher resolution compared that the average home video colour camera. Digi-View will digitize images from some colour video cameras, but the result is nowhere near as sharp. The best camera to use is a closed circuit security camera such as the Panasonic 1410, which outputs RS-170 monochrome video with a 2:1 interlace. Similar cameras can be found at electronics shops and security suppliers for around $400.

This method of scanning a picture into the computer works quite well as long as a few details are observed. The best results are achieved with postcard sized images, which should be placed on a copy stand so they face the camera straight on, eliminating distortion. Proper lighting is crucial: if you are getting colour distortion and grainy pictures you need more light; if there are faint yellow or blue patches, you need less light. It is possible to digitize colour transparencies using the camera with a light box. Just remember that experimentation is a must!

Digi-View is probably the least expensive way to import near-photographic quality images into a computer. Once they are there, they can be saved to disk, and imported into paint programs such as Digi-Paint, Deluxe Paint II, or Photon Paint, where they can be altered, enhanced, turned into brushes, printed out, or added to an animated sequence as backgrounds.

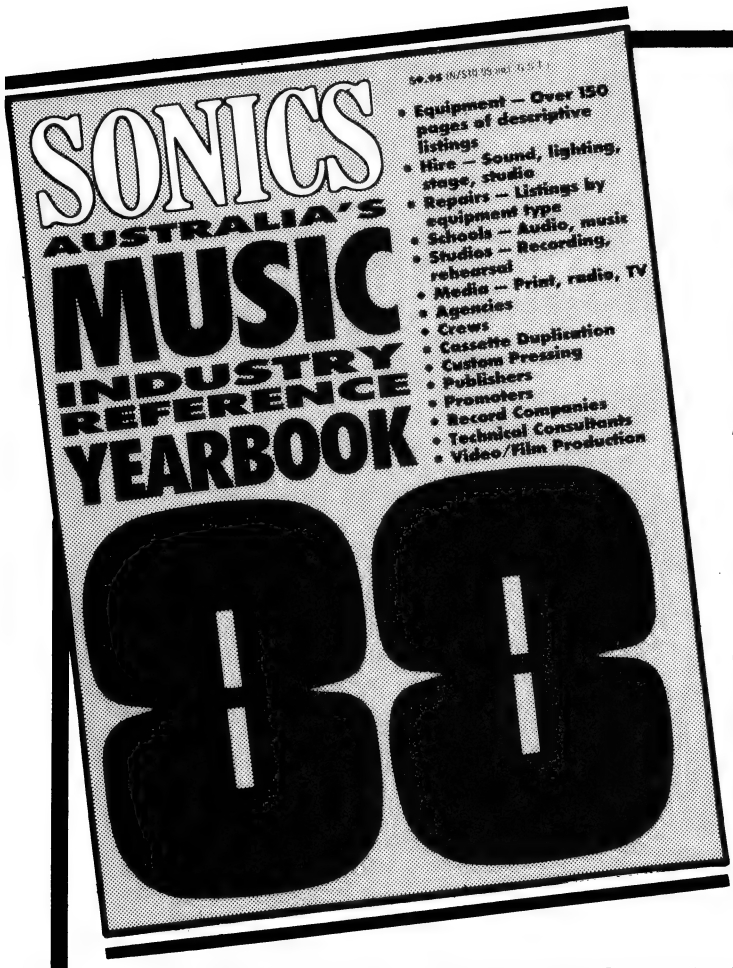
Digi-Paint

New Tek, the makers of Digi-View also produce Digi-Paint, a 4096 colour paint package for the Amiga. Why do you need all of those colours? For any electronic paint program, to display fine details and tonal gradations on faces, say, you need as many colours (or tones) as you can get. If you compare a digitized image of a face in 8 colours, and the same image in 4096 colours, the 8-colour image will have obvious boundaries (edging) between tones which gives it a patchy look – less life-like, if you like. An even better image would be achieved with something like 256,000 colours, but the Amiga is limited to 4096.

Digi-Paint has drawing tools similar to those found in Deluxe Paint II so it is possible to create shaded shapes and dithered fills in 4096 colours instead of 32. The brush manipulations are not as extensive, but it is possible to import brushes from Deluxe Paint, since load and save functions are IFF compatible. (Importing a 4096 colour brush into Deluxe Paint, however will not be successful, since the colours must be reduced, or re-mapped to 16 or 32, which is a compromise that does not always work. Electronic Arts has addressed this problem in their newly released Photolab, which can convert between resolutions and colours, and resize pictures).

Perhaps the best feature is the 'Mode' menu. The default setting is Solid, which means that a brush will draw in the currently selected foreground colour. Blend will average the red, green and blue values of the brush with the background values in the picture. Tint and Light Tint gives you lighter versions of Blend. Between these three modes, it is possible to achieve marvelous translucent effects. Selecting the shading mode allows dithered shading (or gradient fill) of objects or brushes. Using this mode, it is possible to paste a brush into the picture so that its edges blend in smoothly.

'Swap screen' is like Deluxe Paint's spare screen in that it hangs around behind the active screen – you can be work on two screens at once, swapping between them at will. But with Digi-Paint the two screens can be merged, which opens up all sorts of possibilities. Remarkable effects can be achieved with a combination of 'rub-through', which brings portions of the back screen to the front, and the various modes, such as blend or shading. With the mode on solid, rub-through selected, and a brush activated, weird things happen right in front of your eyes. If there is a different picture on the spare screen, it is a bit like peering through a glass-bottomed bucket at a wonderland of colour



SONICS YEARBOOK

THE ULTIMATE REFERENCE FOR THE MUSIC INDUSTRY

WHAT IS IT?

For seven years the Sonics Yearbook has been the most comprehensive and widely accepted reference book for the music, sound and recording industries. In over 340 pages, it lists music-related equipment and its Australian distributors: sound, lighting, backline and studio equipment hire, repair companies, audio and music schools, recording and rehearsal studios, media, and a broad range of people and services (agencies, video production companies, cassette duplication, etc).

WHO USES IT?

As a single comprehensive directory, the Sonics Yearbook is indispensible to everyone who needs music industry information and contacts — musical equipment retailers and distributors, musicians, managers, engineers and studio personnel, agencies, venues and clubs, promoters, record companies — the list goes on! It is *the* information source.

DON'T MISS OUT!

ORDER YOUR COPY NOW

AVAILABLE JUNE 1988 **ONLY $12.50** (plus $2.75 P&H) NZ$14.00 plus P&H.

If you're involved in the music industry you can't afford not to have one!

Simply fill out the form below and mail (with payment) or send name, address, phone no., along with cheque, money order or credit card details, to:

SONICS, Federal Publishing Co., Freepost, No. 4, P.O. Box 227, Waterloo, NSW 2017

(No stamp required if posted in Australia)

Yes! I'd like to order a 1988 SONICS YEARBOOK — the ultimate music industry reference.

Please send me ..... copies
at ☐ $12.50 each plus $2.75 p&h or to NZ
☐ $A14.00 each plus
Surface $3.00 p&h
Airmail $8.00 p&h

☐ I enclose cheque/money order for .....
(made out to Federal Publishing Co.)

☐ Please charge my ☐ Visa; ☐ Bankcard;
☐ Amex; ☐ Mastercard.

Card No:

Card expiry date: ..... /.....

Name: .....

Address: .....

.....

..... P/code: .....

Signature: .....
(Unsigned orders cannot be accepted)

LIMITED OFFER

beneath the surface. As you move the brush around, it 'cuts' a hole in the top screen to reveal portions of the screen beneath – see Figure 4.

Digi-Paint works in 320 *x* 256 resolution, and in interlaced mode, 320 *x* 512. If you only have 512K of memory, some of the features will be disabled (the spare screen in 320 *x* 512, for instance). The manual is thin, when compared to Deluxe Paint's, but there is sufficient information, with tutorials to get you going. It is easy to use, and full of possibilities for people who can handle 4096 colours without getting into a mess.

Express Paint

The most interesting feature in Express Paint is a special colour mode called Extra Half Brite. It turns a 32-colour palette into 64 colours by adding a darker shade of each colour giving more flexibility for pictures requiring subtle shading. The program, from Professional Automation Resources also provides low resolution and high resolution modes. It does not handle 4096 HAM mode, but it does have one quite important feature that some of the other paint packages lack: page sizes can be chosen and text can be imported, manipulated, combined with graphics, and exported in PostScript format.

Express Paint can be used as a desktop publishing package for single page layouts such as newsletters and flyers. ASCII text can be imported into columns or wrapped around graphic objects for special effects. Any Amiga font can be used, and justification, underlining, bolding and italics are supported. Text can be coloured, enlarged or tilted for extra impact. A sophisticated printing tool allows precise scaling of screens to suit the desired output. It is also possible to print multiple page poster-sized output. The PostScript overlay option allows a full laser printer page to be constructed at maximum 300 dpi resolution (2400 *x* 3150 pixels).

A full range of paint tools is provided in Express Paint, with each tool having a number of sub-features that can be selected from a second menu. Large page sizes (up to 8192 pixels wide and as long as your available memory will allow) can be used. It will accept IFF files from the other paint programs, but can not convert from 4096 colours to 64 or 32.

Version 2.2 of Express Paint has a remarkably powerful Undo function: Unlimited Undos! Multiple clicks on the Undo button takes the user backwards in time, undoing each previous operation. This is user-definable according to the amount of RAM you have spare. This function, combined with 64 colours and definable spray painting modes makes it a powerful tool for fine editing of areas with subtle shading.

Photon Paint

Photon Paint, from Microillusions, is a recent addition to the Amiga graphics software range. Gregg Faulkner reviewed it in our August '88 edition, and was very pleased with it (especially the price). At first glance, Photon Paint appears to be a combination of the best features of Deluxe Paint and Digi-Paint. Having used it for a month, I found most of the features of the other packages mentioned above, could be accessed using Photon Paint. But there are some minor differences and trade-offs: Photon Paint can manipulate larger brush shapes in Hi-Res than either Deluxe Paint or Digi-Paint (at least it can on my Amiga which has 2 Megabytes of RAM), but it does take a few minutes to compute them. In HAM mode, with 4096 colours, it performs better than Digi-Paint in merging brushes into backgrounds. This is achieved through the user having more control over colour palettes.

Photon Paint has a number of extra features that are not available in the other graphics packages: 3-D surface mapping with light dependent shading gives you the opportunity to wrap a brush around a three dimensional object (that's how the facer was put on the cube in Figure 5). You can choose between a cube, a ball, an ellipse, a cone, a tube or a free-drawn symmetrical shape. The light source direction and intensity can also be chosen for any of these 3-D shapes.

The manual is written for non-computer literates; it would be even easier to read if it had a few diagrams of the menus and requesters instead of just a verbal description. In terms of the price, it is probably the best all round paint package, giving you the option to paint in all of the Amiga's paint resolution modes.

Which paint package would I recommend? All of them of course, and with the IFF file format, it is an easy matter to swap between packages for fine tuning (sometimes it can feel as if you are using one huge, multi-featured graphics program). But if you can only afford to purchase one or two, Photon Paint gives you the widest options with colour, even though it seems to run slower than the others, so you spend a fair amount of time looking at the 'wait' message while it calculates a transparent fill or wraps a brush around a cube.

Deluxe Paint II is limited to a maximum of 32 colours. However, it works extremely well as a general drawing and painting tool, with advanced features such as perspective fill. It is more than adequate provided you are not after too many subtle shades and transparent effects. Deluxe Paint II is probably the best for educational purposes. Digi-Paint is excellent for re-touching digitized images from Digi-View, and with 4096 colours, it gives the most realistic shading effects for faces – but there is no provision for perspective manipulations.

The Digi-View digitizer is worth purchasing because it allows alteration of photographic material, and it gives you a much greater scope of material to work on with your paint program. Express Paint is a full featured paint package that can manipulate 64 colours, with advanced text capabilities and PostScript output. □

Product Details

Product: Deluxe Paint II
From: Electronic Arts
Distributor: ECP,
4/18 Lawrence Drive, Nerang 4211 Qld
(075) 96 3488
Price: $229.00

Product: Digi-View
From: New Tek
Distributor: Ozi Soft,
8 Kippax St, Surrey Hills 2010 NSW
(02) 211 1266
Price: $399

Product: Digi-Paint
From: New Tek
Distributor: Ozi Soft,
8 Kippax St, Surrey Hills 2010 NSW
(02) 211 1266
Price: $129

Product: Photon Paint
From: Microillusions
Distributor: Questor,
55 Mentmore Avenue, Rosebery 2018 NSW
(02) 662 7944
Price: $179.95

Product: Express Paint
From: Professional Automation Resources
Distributor: Pactronics,
33-35 Alleyne St, Chatswood 2067 NSW
(02) 407 0261
Price: $149.00
(All prices taxed)

INEXPENSIVE SOFTWARE

uni systems — the software people

ALL 5.25" DISKS $10.00 — 3.5" DISKS $15.00 (plus sales tax)

(NOTE: SOME PROGRAMS REQUIRE MORE THAN ONE DISK)

ORDER BY PHONE (02) 905 0031 OR BY MAIL ORDER OR POP IN AND TALK TO OUR FRIENDLY STAFF.

NOW at last inexpensive functional software at a LOW, LOW price. No annual membership fee for our mailing list. You DO NOT have to agree to purchase MORE software in the future. One of the largest USER SUPPORTED SOFTWARE LIBRARIES in Australia. (That also retails general package software). A free catalogue posting system. Most disks have a manual supporting the program.

ALL MS-DOS

WORD PROCESSORS

501 PC WRITE: A high quality word processor equal to those that could cost $500 or more. Includes the use of help screens, split screen edit and wide printer support.
612 CAPITAL WORD: (NEW YORK WORD). A powerful word processor with multiple windows. Has EGA support. Index generator, mail and mailmerge. (Requires 2 drives and 256K)
517 SPELLING CHECKER: A spelling checker for use with many word processors including PC WRITE (NOTE: NOT WORDSTAR). (Old number 501-2)

DATABASES

520 FREE FILE DATABASE: Considered the best form (single disk) database around. The equivalent would cost $100s.
521 FILE EXPRESS DATABASE: This is a 2 disk set database that is unequalled for value as it has most options and facilities of the MORE EXPENSIVE comparison packages. (NOTE: 2 disks).
502 PC FILE: Another high quality product for your business use. An excellent, yet easy to use database program. Menu driven for ease of use. It can be integrated with the word processor and allows full functioning as a database should.

EDUCATIONAL

578 COMPUTER TUTORIAL: Gives instruction that is easy to follow and helps the novice to overcome most difficulties.
579 TYPING TUTOR: A well presented typing tutor which checks timing and errors. The disk also includes a well presented Finance calculator and maths conversion program.
581 MATHS TUTOR: Ideal for teaching as you can change the set up to suit different age groups.
87 SECONDARY MATHS: A good progression for the high school student or teacher.
614 EDUCATION 6: Maths and music programs that suit Elementary to High School levels. Very entertaining music games. (Requires CGA CARD and 128K).
680 PC DOS HELP: A very comprehensive tutorial covering all areas of DOS. This will help you understand and accomplish more with your computer.
590 MUSICIAN: A good program for the budding composer. This enables you to enter your own composition or sheet music notation and then have it played back. The system requirements are 128K memory at least, one disk drive, 80 column display mode and graphics card.

SPREADSHEETS

503 PC GRAPH: From the same stable as the other PC programs and as functional. This allows utilization of data from PC FILE to produce graphs for greater presentation.
504 PC CALC: Of course there had to be a spreadsheet. This one has its own tutorial and a number of advanced features. It also has screen prompts and a wide range of print options.

PLUS MANY MORE

COMMUNICATIONS

537 PROCOMM: The latest version of an excellent Terminal Program for modem. It has all the features of commercially based packages. BAUD rate 300 to 9600, auto dialling DOS pathway, etc.
540 Q-MODEM AND KERMIT: Two terminal programs on one disk with documentation and easy to use.
701 VIATEL: A good communications program which includes the source code. This program runs a 1200/75 modem without a baud rate converter.

GAMES

543 GAMES 1: Sopwith, Pacgirl, Three Demon, Baby, Castle Adventure and Boggy.
544 GAMES 2: Spacewars, Dragons, 747, Flighmare and others.
545 EMPIRE: The war game to end all war games.
548 BASIC GAMES: A compilation of the best games written in BASIC.
550 GREAT BASIC GAMES: Written in Basic and includes Wizzard. Mars, Racecar, etc.
551 SUPER COMPIEED GAMES: A collection of arcade games includes Striker (a great helicopter adventure), Kong and Frog, etc.
552 BERMUDA: Go sailing in the Bermuda Triangle and see if you survive.
556 CHESS: Excellent Graphic games includes Solitaire.
564 GAMES 5: This collection includes Face, Hopper and Insults (they will delight your friends).
566 GAMES 7: Bridge, keyno and other games with a biorythym charting program to interest all.
557 BILLIARDS: Naturally it also includes 8 ball and straight pool. A tennis program is also included on this disk.

UTILITIES

532 POWER MENU: A hard disk system that allows you to choose programs from a menu of what is available on your h/disk.
527 ULTRA UTILITIES: Rated with NORTONS UTILITIES. Allows examination of disks, files, etc.
531 HARD DISK UTILITIES: A selection of utilities to make your hard disk a blessing.

GENERAL

525 FARM MANAGEMENT: A 3 disk set of analysis tools for the person on the land. (NOTE: 3 disks)
652 TENANT AND PROPERTY MANAGEMENT: A handy program for real estate management. This program can be used in conjunction with DBase11,111, & +. (2 DISKS)
535 DISK CATALOGER: A handy program to keep track of all your records.
536 INVENTORY AND STOCK CONTROL: A must for the small businessman to keep track of the turn-over of stock and stock on hand.
506 PC DRAW: A new two disk set consisting of programs that give keyboard drawing AND MOUSE AIDED operation to allow printing of graphics with slide show capabilities. Simulates a COMPUTER AIDED DESIGN SYSTEM program. (REQUIRES CGA CARD [standard with most IBM computers]). (NOTE: 2 disks)

ACCOUNTING

510 GENERAL LEDGER: An excellent general ledger program for small or large business applications which is menu driven for easy use.
511 FINANCE MANAGER: A micro accounting program that exceeds expectations. Ideal for small business or home. Easy to use.
542 PC ACCOUNTING (SINGLE ENTRY ACCOUNTING): Handles general ledger, accounts receivable and payable, etc. Comes with good documentation. (NOTE: 2 disks)

DESKTOP UTILITIES

512 PC YEARBOOK: (INSTANT RECALL) A good calendar type program to organise. This is excellent value for the number of programs on this disk.
513 PC DESKMATE: A memory resident pop-up utility. Allows access whilst running other programs. It includes alarm, calculator, phone directory, DOS and print controls. Manual included on disk.

PLEASE FORWARD THE SELECTED PROGRAMS INDICATED BELOW

NUMBER	TITLE	PRICE

SUB TOTAL $_____

PLUS 20% SALES TAX $_____

POSTAGE $3.00

TOTAL $_____

Payment by ☐ Cheque ☐ Bankcard
Payment by ☐ Visa ☐ M/card

Card No._____

Expiry_____ Signed_____

Name_____

Address_____

_____ State_____ Code_____

UNI SYSTEMS
2/2 William St., Brookvale 2100
PO Box 683, Brookvale, 2100
PHONE (02) 905 0031

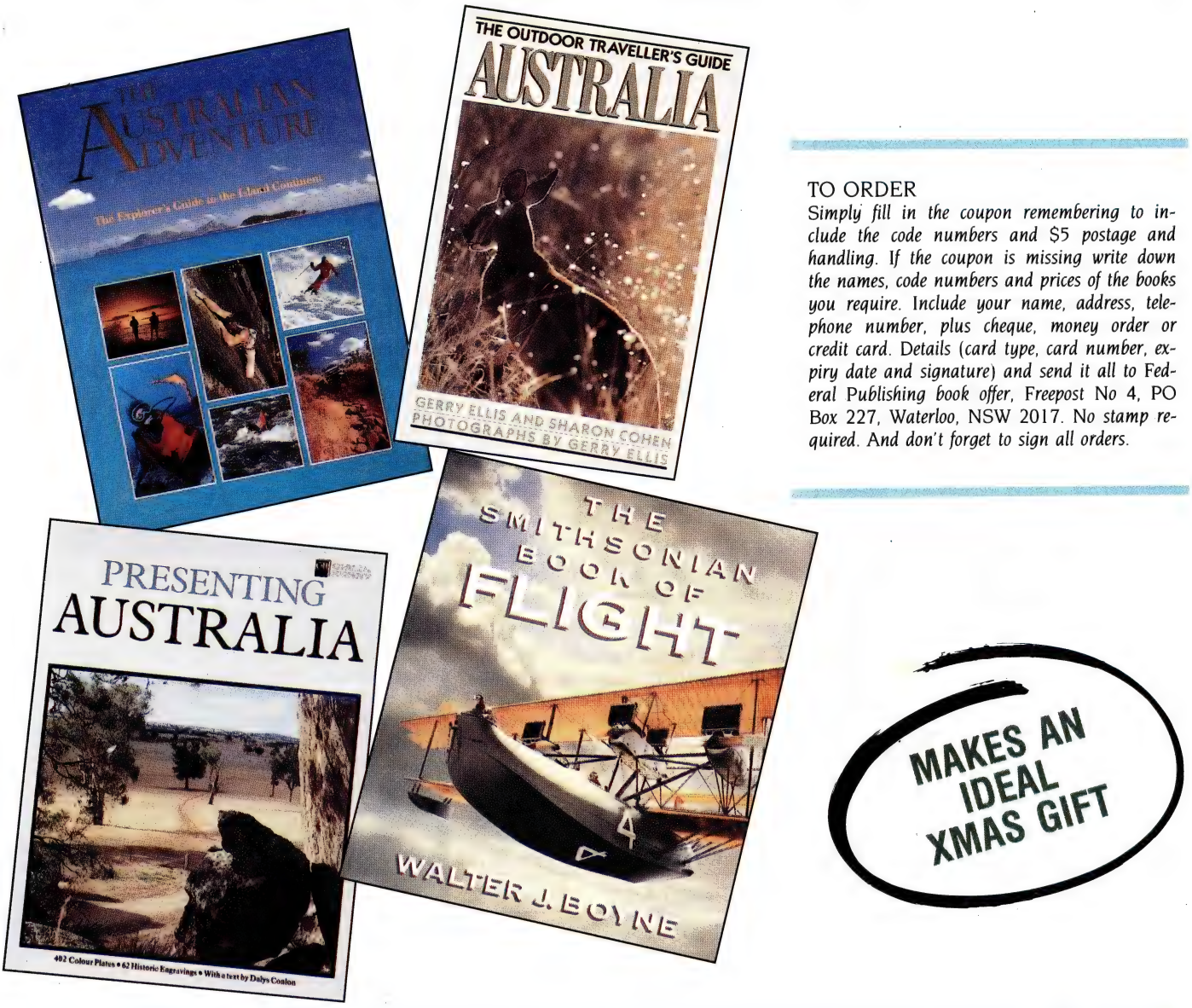
INQUIRY 503

Special Limited Offer — BUY 4 DISKS GET ONE FREE.

SAVE OVER 25% ON THE IF YOU OR

THE COMPLETE SAILING HANDBOOK A beautiful 340 page hardcover book, filled with everything you need to know about sailing. Magnificently illustrated with more than 1000 diagrams and photographs. ~~$29.95~~ $21.95 (CACOM24) **SAILING YEAR 1987-1988** An excellent, informative review of the year's sailing racing. Plenty of bright action pictures bring the text alive to capture the interest of the expert and spectator alike. 256 pages beautifully presented in a hard cover. ~~$29.95~~ $21.95 (CASAI1) **PACIFIC SAIL** The vast Pacific Ocean has been sailed by ships from the west for many centuries. All these vessels realistically depicted in superb paintings in this 192 page hardcover book. ~~$39.95~~ $29.95 (CAPAC1) **THE SMITHSONIAN BOOK OF FLIGHT** "I can't answer except to assure you that it will be spectacular" (Orville Wright, commenting on the future of aviation). We think you will find this beautiful 288 page history of flight book the same. ~~$59.95~~ $44.95 (TWSM1) **OUTBACK PUBS OF AUSTRALIA** Over 50 beautifully reproduced prints of Rex Newell's paintings. Featuring outback pubs in Australia and the tales connected to them. ~~$26.95~~ $19.95 (CAOUT1) **EXPLORE TROPICAL QUEENSLAND** From the Great Barrier Reef to it's vast outback plains, tropical Queensalnd is full of amazing and colourful contrasts beautifully presented in this 160 page book. ~~$29.95~~ $21.95 (CAEXP2) **DINKUM AUSSIE PICTURE BOOK** Contains over 100 superb photographs which show Australia at its best. Everything from rolling wheat fields to the Sydney Opera House. ~~$14.95~~ $10.95 (CADIN8) **EXPLORE AUSTRALIA'S GREAT INLAND** 160 pages of suggested outback trips, beautifully depicted in full colour photography. Ideal for ideas before you get down to the real planning. ~~$29.95~~ $21.95 (CAEXP2) **THE ENCYCLOPEDIA OF AIRCRAFT** This meticulously researched encylopedia presents an unrivalled record of over 500 military and civilian aircraft in Australia and New Zealand today. Each entry accompanied by a photograph. ~~$39.95~~ $29.95 (CAILL10) **THE AUSTRALIAN ADVENTURE** This superb 528 page book reflects the best of Australia's travel and adventure destinations. Beautifully presented with glorious colour photography. It would be a valued asset to any library. ~~$49.95~~ $36.95 (CA AUS61) **PRESENTING AUSTRALIA** A land of harsh beauty magically captured in over 400 photographs and engraving. For all Australians and visitors, this book brilliantly reveals the charm and appeal of Australia, past and present. ~~$26.95~~ $19.95 (CA PRE1) **DINKUM AUSSIE ODDITIES** A light hearted look at the weird and wonderful things, mostly man made, but some natural, which makes Australia unique. ~~$8.95~~ $6.70 (CA DIN3) **DINKUM AUSSIE BICENTENARY** Bob Ryan looks at the lighter side of the first fleet and early settlement. He explores the bungles and bickering, the beer and the beauties, the frolics and fun. ~~$8.95~~ $6.70 (CA DIN5) **DRUNK, INSANE OR AUSTRALIAN** Here it is an Australian publishing first. The first detailed, factual account of the funniest and most bizarre events in the recent Australian history. ~~$8.95~~ $6.70 (CA DRU1) **THE OUTDOOR TRAVELLER'S GUIDE TO AUSTRALIA** This is the premier guide to exploring and enjoying the landscape wildlife, and vegetation of Australia. Superbly presented with 242 colour photographs and 15 full colour maps created especially for this book. ~~$29.95~~ $21.95 (WC 0000000) **ACES HIGH** Fast jet fighter, transports and trainers, all the way from the target tug to top gun itself; modern military air power captured in its element by some of the world's finest aviation photographers. ~~$29.95~~ $21.95 (CA ACE2) **MIDDLE AGE RACE ... AND OTHER MALE INDIGNITIES** At last, an honest hilarious guide to that mysterious and terrifying phenomenon: Male Middle Age. ~~$9.95~~ $7.45 (CA MID1) **THE DINKUM AUSSIE DICTIONARY** A list and definitions of all those words and phrases that only an Australian can understand (... and some even Australians don't know!). ~~$8.95~~ $6.70 (CADIN1)

SE MAGNIFICENT BOOKS DER NOW!



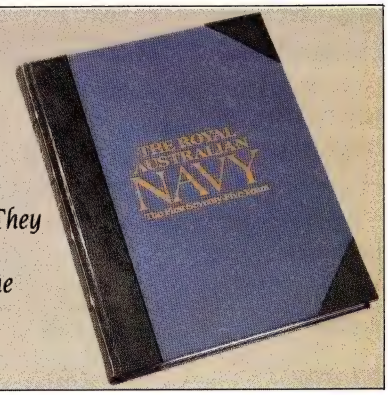
TO ORDER

Simply fill in the coupon remembering to include the code numbers and $5 postage and handling. If the coupon is missing write down the names, code numbers and prices of the books you require. Include your name, address, telephone number, plus cheque, money order or credit card. Details (card type, card number, expiry date and signature) and send it all to Federal Publishing book offer, Freepost No 4, PO Box 227, Waterloo, NSW 2017. No stamp required. And don't forget to sign all orders.

MAKES AN IDEAL XMAS GIFT

PLUS...WIN THIS $950 COLLECTOR'S ITEM

Orders of books from these pages received before 16th December, 1988 will go into the draw to win this magnificent book. Only 350 copies of this book have been produced. They are numbered and signed and bound in Australian leather and buckram. "The Royal Australian Navy the First Seventy-Five Years" is now in the library of Her Majesty the Queen. Note: The book can also be ordered for **$950** (CA ROY7)



VAPORWARE

A Division of Halldale Technologies Pty Ltd

18 Warnock Street Guildford, NSW 2161 - Fax (02) 632 5298

P.O. Box 286 Guildford, N.S.W. 2161

(02) 632 8841
OPEN 8 till 8 , 7 Days

(02) 214 7181
24 Hrs, 7 Days

CAD PACKAGES

GENERIC CADD Level 3 NEW	**$350**
GENERIC 3•D & Rendering	$475
CADD Symbol Libraries available from	$65

COMMUNICATIONS

Brooklyn Bridge 2.0 *(NEW Version)*	$192
Carbon Copy Plus *(NEW Version 5)*	**$295**
DeskLink	$260
LapLink Plus *(NEW Version 2)*	**$210**
Mirror II *(Crosstalk Compatible)*	$ 95
PC Anywhere	**$ 199**

DATABASE

DB FAST Compiler NEW	**$260**
D B X L Ver 1.2	**$269**
Q & A Version 3	**$499**
Quicksilver Compiler Ver 1.2*	$699

DESKTOP PUBLISHING

VENTURA PUBLISHER 1.1	**$1189**
NewsMaster II *(NEW Version)*	**$130**
PageMaker 3.0 *(NEW Version)*	**$1790**
Pizazz Plus	$199
Publisher's Paintbrush *(& FREE Book)*	$440

MICROSOFT SPECIALS

QuickC or QuickBasic 4.0	**ea $120**
Microsoft MacroAssembler 5.1	$215
Microsoft C Compiler Ver. 5.1	**$640**
Microsoft Fortran Compiler V4.1	$640
Microsoft Windows Ver. 2.10	**$165**
Microsoft Works *(& FREE Book)*	$310

SPREADSHEET

P C E X C E L *(FREE 101 Macros)**	**$720**
QUATTRO *(FREE Using Quattro Book)*	**$310**
VP-Planner Plus *(Lotus 2.01 compatible)*	$260

SPREADSHEET Add-ons NEW

101 Macros for Excel, 1-2-3, Symphony	
SuperCalc, WordPerfect & more	ea $93
3-2-1 Blastoff *(Lotus Accelerator & Security)*	$225
ProjectCalc *(Project Manager Lotus Add-in)*	$275
SQZ! Plus *(NEW Version)*	**$139**
The Worksheet Utilities *(5 Lotus Add-ins)*	**$149**

NEW PRODUCTS

3-2-1 BLASTOFF ***$225***

Converts your Lotus formulas into instructions for your math coprocessor chip. Worksheets recalculate 3 to 15 times faster !! Also provides Minimal Recalc.

ATHENA BIOS ***only $99***

Runs CGA programs on Hercules

THE BALER ***$750***

Compiles Lotus 2.01 Spreadsheets into Microsoft QuickBASIC Programs

DB FAST ***only $260***

dBASE Compiler. Faster than Clipper No Run-time licensing fees.

Disk Technician Advanced $280

Falcon F16 Flight Simulator $72

Flight Simulator 3.0 $79

Microsoft Mouse $225

SOFTSAFE ***$179***

Auto File Encryption, Hard Disk Access Control, Virus Detection, Screen Privacy.

PROJECT CALC ***$275***

A Project Management add-in for 1-2-3 that uses familiar Lotus menus and produces Gantt & PERT charts. Has full power scheduling, critical path analysis, flexible reports & high quality graphics.

SIDEKICK PLUS $260

SPRINT (New from Borland) $298

Turbo Assembler/Debugger $Call

Turbo Pascal 5.0 $225

Turbo C 2.0 $225

Turbo Prolog 2.0 $158

WORD PROCESSING

MICROSOFT WORD 4.0 NEW	**$569**
WORDPERFECT 5.0	$594
Gram•mat•ik III *(Style Checker)*	$135
Legal or Medical Spell Dictionary	ea $135

UTILITIES

Above Disc	$150
Copy II PC Ver. 4.01 * SPECIAL *****	**$ 59**
Copy II PC Deluxe Option Board	**$199**
DESQview 2.01	**$199**
Disk Technician Plus	**$189**
D U E T *(Print Spooler & sideways printing)*	$130
Fastback Plus *(NEW Version)*	**$250**
FormTool with Free Greatest Hits	$197
Mace Utilities *(Inc. FREE Mace Vaccine)*	$147
Norton Editor	**$ 99**
Norton Commander 2.0	$120
Norton Utilities Advanced	**$193**
PC Tools Deluxe *(NEW Version 4.2)*	**$ 99**
Print Q	$179
SoftSafe (PC Data Security) NEW	**$179**
X-Tree	$ 99
X-Tree Professional	**$175**

COMPUTER BOOKS

1-2-3: The Complete Reference	$42.50
TURBO C: The Complete Reference	$48.50
dBASE III +: The Complete Ref.	$42.50
DOS: The Complete Reference	$49.50
Turbo Pascal: The Complete Ref.	$49.50
Using Microsoft QuickBasic	$37.50
Using Turbo Basic	$37.50
Using Microsoft Quick C	$37.50
Using Turbo C	$37.50
Advanced Turbo C	$42.50
Using Turbo Pascal Version 4	$37.50
Advanced Turbo Pascal Version 4	$41.50
Using Turbo Prolog	$37.50
Advanced Turbo Prolog Ver 1.1	$40.50
Using EXCEL for the PC	$41.50
Advanced EXCEL for the PC	$41.50
Using QUATTRO: The Prof. S'sheet	$41.50
Microsoft Works for the PC	$38.50
Microsoft Word 4.0 Made Easy	$36.50
Using PageMaker for the PC	$43.50
Mastering VENTURA 1.1	$44.50

Send orders to: VAPORWARE
P.O. BOX 286 GUILDFORD, N.S.W. 2161

Please Tick Payment Method:

MASTERCARD ☐ VISA ☐

BANKCARD ☐ Cheque ☐

Please call before sending purchase orders.

YC 11/88

Signature: _____ Expiry Date: _____

NAME _____

ADDRESS _____

_____ STATE _____

P/CODE _____ PHONE ( ) _____

Product Name	Qty	Price	Amount
Norton Editor (If order total > $750)			FREE
Shipping			$7.50

All Products are subject to availability. All prices include SalesTax and are subject to change without notice.

TOTAL _____

* While Stocks Last

MYTOUCH.PAS. . . for the correct time

Turbo Pascal 4.0 is here – and Peter Nolan has been wasting no time: the new version can save up to 60 per cent of programming!

OKAY, so I lied. My recent article on Path and File names ('Parsing a filename with Turbo Pascal', Sept. '88) finished up by saying 'In a future article I will show you . . .'. Well, at least at the time I was not lying, but now I must confess I doubt I will be producing the article in question. Why I hear you ask? Because I have just received my copy of Turbo Pascal Version 4.0 from Borland.

With two days of reading the 640 page manual (gasp!), I have discovered too many goodies in Version 4.0 to spend any further time with Version 3.xx. Unless, of course, the jackhammer subtlety of our Editor prevails, I am a happy Version 4.0 keeny only.

At last wildcards can be used in a filename and directory searches are possible very easily.

Let me tidy up one thing though before I go on, as I am sure a rave-like aura will surround this and future Turbo Pascal 4.0 articles. I purchase all my software from the manufacturer – it is not supplied for review. That way I feel free to write about what I find as I find it. Whether it scrapes past the Editor and Ad Sales department is another thing (what a terrible thing to suggest!).

My intentions with the original article mentioned above was to produce a program similar to Unix's TOUCH which allows you to change the date and time stamps on a file. That firstly required the breaking down of the command line parameters to identify the Path, if any, and the group of filenames to touch. That was to have been followed by the means to change the date and time stamps. However, Borland to the rescue and nearly 60 per cent of the program work is already part of Version 4.0. So here it is as MYTOUCH.PAS in Turbo 4.0.

Thanks to *many* predefined data types, procedures and functions Turbo 4.0 (here after called TP4) has taken a lot of the drudgery out of programming. At last wildcards can be used in a filename and directory searches are possible very easily. So let's get into it.

Differences

First off, TP4 has precompiled units. If this doesn't yet make sense to you then perhaps a more thorough reading of the manual is required. For all of you who have pirated TP4 then best of luck – you are truly out on a limb now. Whilst you may have been able to get by with TP3 you are stymied in TP4. The differences are enormous.

Back to units. The Strip function to remove leading and trailing blanks from a string, and UpperCaseString to convert a string to all upper case, are certain candidates for inclusion in your utility unit.

With any future articles I will be declaring MYUTIL in the uses statement. This will contain Strip and any other procedures and functions I develop over the coming months. I could, of course, build the MYUTIL unit here in this article but that might make it too easy for the pirates! So, for now, we will declare the two standard units CRT and DOS and you can manufacture your MYUTIL unit at your leisure.

The first thing we must do is establish the default date and time in case neither was supplied on the command line. TP4 provides

Listing 1. *MYTOUCH.PAS – a Turbo Pascal 4.0 utility for date and time stamping files. The same program in version 3 would have taken about 200 more lines of code.*

```
uses
  dos,crt;
var
  FileTime          : longint;

{---------------------------}
procedure ExitError(ErrNum : integer);
begin
  HighVideo;
  textcolor(white+blink);
  case ErrNum of
    1  : write('Filename');
    2  : write('Date time');
    3  : write('Command line');
  end; { of case ErrNum }
  textcolor(white);
```

```
  lowvideo;
  writeln(' error encountered... ');
  writeln;
  writeln('USAGE :');
  writeln;
  writeln('MYTOUCH filename [/D dd/mm/yy] [/D dd/mm/yyyy] [/T hh:mm]');
  writeln;
  writeln('      Year must be between 80 and 99 -OR- 1980 and 1999');
  writeln('      Time must be in 24 hour format');
  writeln;
  writeln;
  writeln('EXAMPLE :');
  writeln;
  writeln('MYTOUCH MYFILE.TXT                      < Current Date/Time');
  writeln;
  writeln('MYTOUCH MYFILE.*  /D 12/12/1982         < New Date, Current Time');
  writeln;
  writeln('MYTOUCH ??FILE.TXT /D 06/11/87 /T 12:45 < New Date/Time');
  halt;
end; { procedure ExitError(ErrNum : integer); }

{--------------------------}
function Strip(Strg : string) : string;
var
  Len              : byte;

begin
  while Strg[1] in [#32,#9] do delete(Strg,1,1);
  Len:=length(Strg);
  while (Len > 0) and (Strg[Len] in [#32,#9]) do
  begin
    delete(Strg,Len,1);
    dec(Len);
  end;
  Strip:=Strg;
end; { function Strip(Strg : string) : string; }

{--------------------------}
function UpperCaseStr(Strg : string) : string;
var
  Len              : byte;

begin
  Len:=length(Strg);
  while Len > 0 do
  begin
    case Strg[Len] of
      'a'..'z' : Strg[Len]:=upcase(Strg[Len]);
    end; { of case Strg[Len] }
    dec(Len);
  end;
  UpperCaseStr:=Strg;
end;  { function UpperCaseStr(var(Strg : string) : string; }

{--------------------------}
procedure FixDateTime(var FDT : longint);
var
  i,CaseSelect     : byte;
  TempWord         : word;
  Strg             : string;
  FileDT           : DateTime;

{--------------------------}
function GetValue(Strg : string; MinLimit,MaxLimit: byte) : word;
var
  HoldInt,Code     : word;

begin
  Strg:=Strip(Strg);
  val(Strg,HoldInt,Code);
  if HoldInt in [MinLimit..MaxLimit] then
     GetValue:=HoldInt else ExitError(2);
end; { function GetValue(Strg : string; MinLimit,MaxLimit: byte) : word; }

begin                                          { procedure FixDateTime }
  GetDate(FileDT.Year,FileDT.Month,FileDT.Day,TempWord);
  GetTime(FileDT.Hour,FileDT.Min,FileDT.Sec,TempWord);
  i:=2;
  while i < paramcount do
  begin
    CaseSelect:=pos(UpperCaseStr(paramstr(i)),'/D/T');
    Inc(i);
    Strg:=paramstr(i);
    Inc(i);
    if Strg > '' then
    begin
      case CaseSelect of
        1 : begin
              FileDT.Year:=GetValue(copy(Strg,length(Strg)-1,2),80,99)+1900;
              FileDT.Month:=GetValue(copy(Strg,4,2),1,12);
              FileDT.Day:=GetValue(copy(Strg,1,2),1,31);
            end;
        3 : begin
              FileDT.Hour:=GetValue(copy(Strg,1,2),0,23);
              FileDT.Min:=GetValue(copy(Strg,4,2),0,59);
              FileDT.Sec:=00;
            end;
        else ExitError(2);
      end; { case CaseSelect }
    end else ExitError(3);
  end;
  packtime(FileDT,FDT);
end; { procedure FixDateTime(var FDT : longint); }

{--------------------------}
procedure TouchFiles(Strg : string; FDT : longint);
var
  FileRec          : SearchRec;
  FileName         : string[12];
  DOSPath          : string;

{--------------------------}
procedure SetFileTime;
var
  FileVar          : file;

begin
  if DosError = 0 then
  begin
    FileName:=FileRec.Name;
    writeln(DOSPath,FileName,'  Done');
    assign(FileVar,DOSPath+FileName);
    {$I-}
    reset(FileVar);
    {$I+}
    if ioresult <> 0 then
    begin
      close(FileVar);
      ExitError(1);
    end;
    SetFTime(FileVar,FDT);

    close(FileVar);
  end;
end; { procedure SetFileTime; }
begin  { procedure TouchFiles }
  DOSPath:=Strg;
  while (length(DOSPath) > 0) and
        (DOSPath[length(DOSPath)] <> '\') do
         delete(DOSPath,length(DOSPath),1);
  FindFirst(Strg,AnyFile,FileRec);
  if DosError <> 0 then ExitError(1);
  SetFileTime;
  repeat
    FindNext(FileRec);
    SetFileTime;
  until DosError <> 0;
end; { procedure TouchFiles(Strg : string; FDT : longint); }

begin
  clrscr;
  writeln('MYTOUCH.. The UNIX-like file Date/Time re-stamper');
  writeln('-----------------------------------------------');
  writeln;
  FixDateTime(FileTime);
  TouchFiles(paramstr(1),FileTime);
end.
```

Sonics

the magazine for hands-on music-makers

For subscription details, call (02) 693-6666

A·T·S COMPUTING

for consistently

LOWER PRICES

on

EPSON
NEC
AMSTRAD
SAMSUNG
ATARI

EPSON AX2 with EGA colour monitor, 40Mb hard disc *PLUS* LQ Printer: **$5350** inc. tax
NEC 12MHz 40Mb Powermate 1 *PLUS* **$5995** inc. tax
EPSON 20Mb AT-compatible battery lap top portable *PLUS* LQ Printer: **$5295** inc. tax
SAMSUNG 40Mb AT with EGA colour, *PLUS* 2 colour network stations complete with software **$9750** inc. tax
SAMSUNG 12MHz 80286 32Mb voice coil hard disk lap top *PLUS* LQ500 Printer: **$5495** inc. tax

NEC, EPSON, AMSTRAD, ATARI computers and printers — phone for best deals

SYDNEY: (02) 868 5222

123-127 Midson Road, Epping, 2121

BRISBANE: (07) 862 1944

24 Sandgate Road, Breakfast Creek, 4010

ELSEWHERE: (008) 25 1837

the Get procedures for Date and Time. Along with the three main variables for date or time, the variable TempWord is used as a throw away as we are not interested in the value returned here for our current use.

Next we begin to step through the parameters passed on the command line. We start at parameter two, as the first one should be the file name or file group if wildcards are used. Ideally, we perhaps should check the first parameter to see if it is a valid filename and worthwhile going on. However, that checking will be done by TP4 when we attempt to process the filename later so let's not waste programming at this point. After all, the time required to process the date and time requirements is not that great, so let's assume for now the filename is okay.

The term, switch, is often applied to command line parameters (I have always been a little fuzzy about why they are called switches, but we will use the term here to maintain conformity).

CaseSelect is used to indicate which of the the date/time switches is in the command line. You will notice the UpperCaseStr function is called at this time.

UpperCaseStr first gets the length of the string and begins to step backwards through the parameter. At each character it checks to see if a match is found in the case statement for lower case letters. This saves time instead of routinely converting all letters many of which may not need converting. I started at the end as I can get away with only one counter and compare variable. To start at the beginning of the string I have two options –

1) Use 'for i:=1 to length(Strg) do' which means that the string length is checked for every loop (this wastes time); or

2) set Len to the string length and then use 'for i:=1 to Len do' this wastes another variable.

TP4 won't allow the use of the 'i' variable in a 'for' loop unless it is declared within the scope of the calling procedure. This has always been good programming practice but now TP4 have made it mandatory. That is you cannot use a global variable in a 'for' loop. Since it makes no difference to TP4 at which end we start, then let's save space and time and begin at the end.

The parameter counter is incremented to point at the data following the switch, then incremented again ready for the next switch if any.

Once CaseSelect is established we break down the parameter in to its Year, Month, Day, Hour, Minutes groups and check to see if it is within bounds for that particular type. This is not a very thorough method for checking if the date is valid. For instance, 30/02/88 is quite possible. However, for our purposes here it will suffice. I will in a future article give you a function to include in MYUTIL that will verify dates exactly.

val procedure

You will notice the year is checked between 1980 and 1999. Borland set the lower limit with it date packing routine built into the TP4 compiler. I set the upper limit to save programming effort with the theory that, should you plan to be using TP4 and these PCs in the 21st century, you can modify the checking routine then. But for now I won't waste my time.

Prior to the 'val' of Strg being set the function Strip is called to firstly remove any leading spaces (#32) and or tabs (#9). The val procedure will return a value of zero for a string with leading blanks. I have chosen to strip trailing blanks and tabs, as well, since you may be including this routine in your utility unit. Stripping blanks may seem a little unnecessary, but if the date/time string contained spaces instead of zeros, then the resulting file date stamp would be wrong; for example, 12/ 3/88 would give a file date of 12/00/88. The above routines are processed again if there are further command line parameters pending.

Now that the date and time have been established from either the command line, or by using the default system date we can use the standard procedure to pack the date in to the long integer format required for the file. There is little need for you to know the format of this date/time packing, as TP4 will look after it all internally for you. However, if you are interested, refer to your DOS technical reference manual and all will be revealed (it's no big deal).

Throughout this program you will see ExitError(xx) used in the event of something not quite being to our liking. The error messages are *very* cryptic and quite inadequate for a commercial type of project. I have intentionally left them this way to give you something to do, too. With the vast number of error numbers available through TP4, you could make this into a very neat and tidy error handler. One point to note, though: the error message numbers returned by TP3 are significantly different and *not* interchangeable with TP4.

CaseSelect is used to indicate which of the the date/time switches is in the command line.

TOUCH

Okay, we are ready to TOUCH the files. We are going to need the DOS Path in order to find the files if they are not in the current directory. So, DOSPath copies the full parameter(one) string and then sets about stripping off the filename as per last months program.

You may or may not know, but DOS has two function calls for locating files on a disk. The first function finds the first occurrence of a specified file and the second will continue the search for subsequent files. TP4 has adopted this approach for file access.

The first file is retrieved by the standard procedure FindFirst. If no error is returned, then we need only to assign the Path (if any) and filename to a file variable to be able to change the date and or time. The file must, of course, be reset first. Using the $I– directive we suspend IO checking during the reset, if an error occurs then the file is closed and an exit to our error handling routine is effected. The IO checking is re-established with the $I+ directive and a call to the standard TP4 procedure SetFTime is made with our compressed date in FDT (FileDateTime).

Not too surprisingly, we can continue on with the rest of the files in our group (if wildcards were used), by using the TP4 procedure FindNext, similarly changing their dates and times as we go.

You can see from the relative simplicity of the program requirements here that Turbo Pascal Version 4.0 is absolutely leaps ahead of Version 3.xx. To achieve the same results from TP3 would have required at least another 200 lines of code.

I know one of you bright young things are about to jump up and say 'You fool, Borland provides a TOUCH program with TP4'. Gimme a break! I have already sussed that one out – Borland's will only reset the file's date/time stamp to the current system setting. With MYTOUCH you are master of your time! □

WHAT BUSINESS SOFTWARE SHOULD I BUY?

PACKAGES WILL BE AVAILABLE FOR PURCHASE AT DISCOUNTS OF UP TO 20%

No individual or company can hope to survey the entire software market and select the best and most cost-effective package for the job.

Except someone who is paid to do it.

Steve Keen, software reviewer for *YOUR COMPUTER*, has been assessing databases, spreadsheets and graphics packages for more than four years.

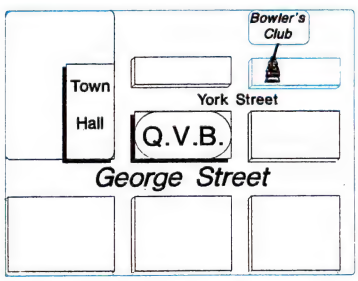
Nine times out of ten, he has found the market leaders are not the most powerful. Or flexible. Or the best value.

He has discovered packages which are:
• far more powerful • far easier to use • cheaper • backed by excellent local support.

But these packages won't win simply because they are better. The market has to know they are better. The Keen Software Evaluation Seminar Series will give these packages the exposure they deserve.

The first seminar is on databases.
Attend, and you will see:
- A text database which ensures you never miss another meeting or forget another contact. Ever.
- A relational database which can compile an inventory management system in 30 minutes.
- Another relational database which has features the market leader can only dream about.
- A number-crunching database which can handle the affairs of a large multi-national. Single-handedly.

Date? *Wednesday, November 16, 6pm-9pm.*
Location? *Auditorium, NSW Bowlers' Club, 95 York Street, Sydney (one block from the Queen Victoria building).*
Cost? *$50 a head at the door, or $40 if you register beforehand, using the form below.*



THE KEEN SOFTWARE EVALUATION SEMINAR SERIES

Yes, I will be attending the first Keen Software Evaluation Seminar on Databases

Name(s): ..... Position(s): .....

Company: ..... Address: .....

.....

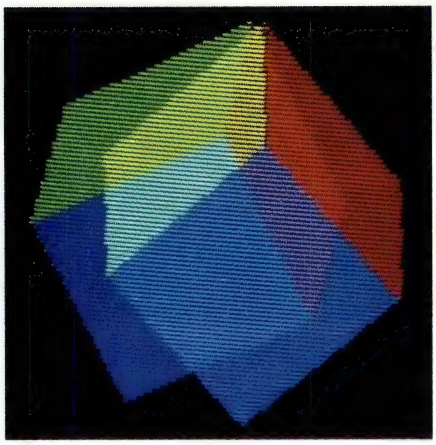
Contact Telephone Number(s): ..... Fax No: .....

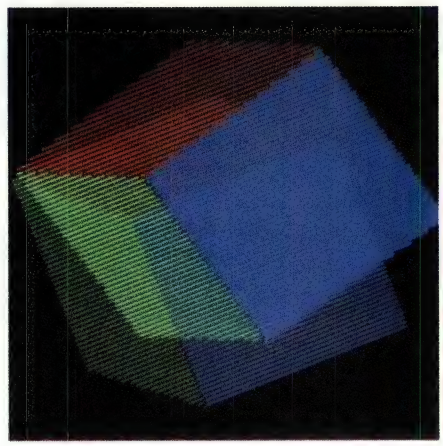
Please find attached a cheque or money order to the value of $..... Made payable to Keen Software Evaluations.

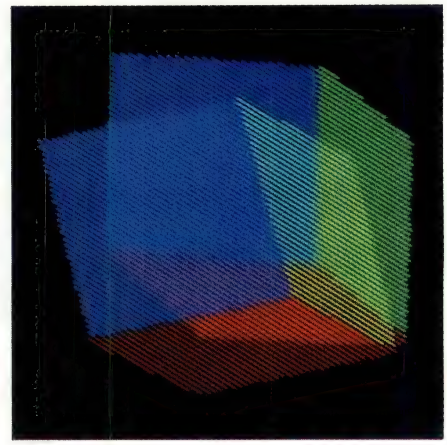
(Send confirmation, with payment to Keen Software Evaluations, BIZWIZ, 245 Bronte Rd., Waverley, NSW 2024. For further information contact Kathleen Kenny. Tel.: (02) 387 3277

QuickBasic Revision 4

Revision 4 has delivered the promise of earlier versions without the scars of growth – Jeff Richards found it's now a powerful tool.







Cube.bas, a Source listing provided with QuickBasic 4, provides a macro string to draw a cube, paint the sides and rotate it.

ONE OF THE three manuals for QuickBasic Revision 4 has a chapter entitled 'Vital Information for all QuickBasic Users' The first section in this chapter is boldly headed 'Why QuickBasic Is Better Than Other Basic products', and consists of 4 pages of self-praise for Microsoft's latest Basic product. While this is somewhat off-putting at first, in fact the product largely lives up to the claims made for it, and the 'Other Basics' that it most puts to shame are Microsoft's own BasicA, GW-Basic and the Basic compiler.

This new Revision is a major update, with many new features added and some significant ties with earlier versions well and truly severed. It has been described as a complete re-write. While a certain amount of the low-level code still remains, no doubt, it is best regarded as a completely new product. Compatibility with other Microsoft Basic products is significantly reduced, and the conclusion is almost inescapable that Microsoft is presenting QuickBasic as the standard for its future Basic products.

Revision 4

There is now provision for a complete editing environment, which provides facilities for creating, executing, testing and debugging Basic programs, as well as creating library modules and standalone executable programs. With the exception of some library management routines, it is now unnecessary to leave the QuickBasic environment during development work.

The major break with other Microsoft Basics is in adopting the IEEE format for floating point numbers. This has little obvious impact except when storing floating point numbers in internal format, for instance in random or binary files. Since the other products don't support binary mode files, even this limitation is not significant. Functions are provided to convert from Microsoft format to IEEE and back, as necessary, to permit a one-time conversion of data files. Alternatively, a command line option is available that does the conversion in both directions automatically.

Although it is not explained in the documentation, the adoption of the IEEE standard is probably responsible for the automatic and invisible recognition and use of the math co-processor, if available. After the difficulties of co-processor support in Revision 3, this change alone will warrant the upgrade.

There are numerous other changes from Revision 3, which of these you find significant depends on what you use QuickBasic for, but the changes I found most welcome were long integers and the simplified library functions. Long integers are 32-bit signed values, giving a range of approximately plus and minus 2 billion. In many circumstances where double precision had to be used, long integers will now do the job with reliable precision and more speed.

Considering that a prime advantage of using a compiler is the ease with which Assembly language routines could be incorporated, the procedures involved in earlier versions of QuickBasic were clumsy

at best. This has changed with Revision 4, and it could now hardly be easier. Two standard libraries are supplied – one version for the environment built using LINK and one for standalone compilation that is managed with LIB.

In each case a custom library is built by combining the standard library with the custom modules using the appropriate utility. If the custom libraries are given the same name, then indicating the library name on the QB command line will cause the correct library to be searched depending on whether in-memory or standalone compilation is requested.

In addition, because standard utilities are used to manage the libraries, they can be dissected and examined. An example Basic program is supplied that does just this for the in-memory library. The QuickBasic manual goes into considerable detail about how to write library routines in QuickBasic, C and Assembler and build them into the standard library, and it also shows how to write modules in QuickBasic for use C or assembler programs.

At the same time, a procedure for making DOS and BIOS interrupt calls simply and reliably has been added.

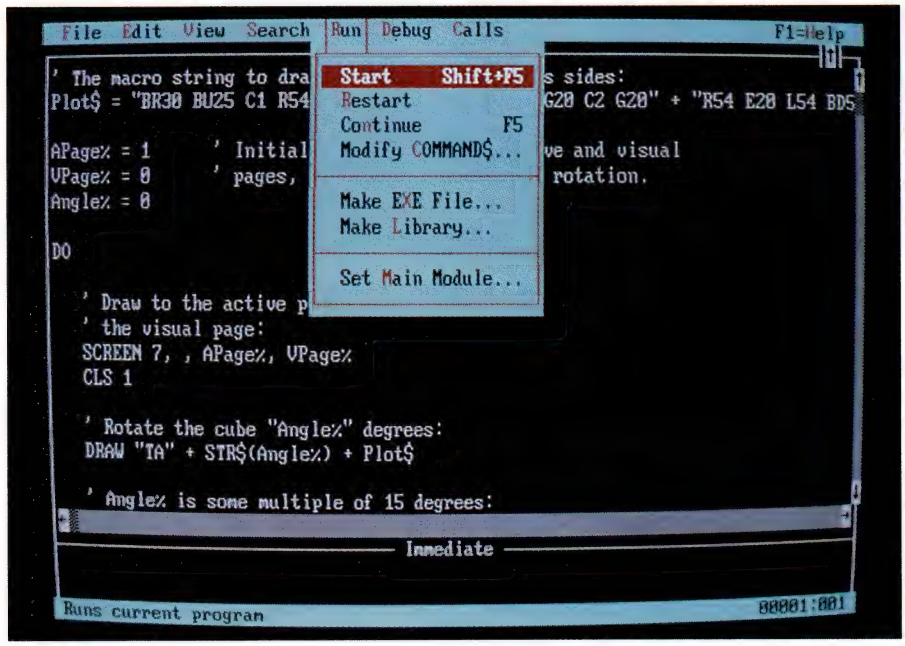
Editing mode

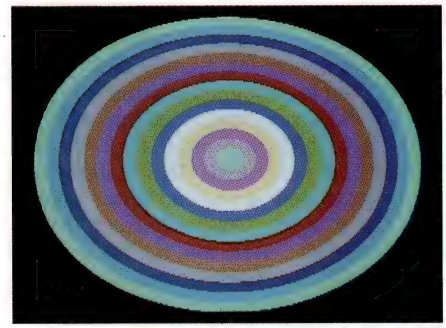
While the changes in the language are significant, they are not the most striking feature of Revision 4. That distinction belongs to the editing environment MicroSoft have provided. The advances fall into three categories – the speed of compilation, the editing facilities and the debugging facilities.

Programs are now compiled as they are loaded, and the speed is astonishing. A line counter at the bottom of the screen shows progress, and it jumps in increments of 20 to 30 lines as fast as it can be updated. The speed with which the program can be accessed from disk is now more important than the speed of compilation.

This speed improvement is partly achieved through a form of storage in which the program is semi-compiled – it is similar to, but not compatible with, the form in which the interpreter stores it programs. QuickBasic will happily load simple ASCII text files, and there is an option for storing edited programs as ASCII text.

When it comes time to run the program there is just a short delay while the program is prepared. Any remaining errors that were not detected during program entry, such as undefined subroutines, are found and can be fixed.





The reduced compatibility with other Microsoft Basic products suggests that QuickBasic 4 will be new standard for Basic.

Revision 4 features

1) SUB and FUNCTION procedures are now genuinely independent modules.
2) User defined variable types (or 'records');
3) Improved block constructs;
4) Long integers;
5) Recursive procedures;
6) IEEE compatibility in number formats;
7) BINARY mode for disk files;
8) Commands line parameters can be specified from within the environment;
9) A comprehensive and powerful editing/debugging environment.

A 'document load' option is provided to permit loading a program simply for the purpose of having a look at the code, or for cutting out a piece of code for use elsewhere. This works even for programs saved in the semi-compiled form.

Not only are programs compiled as they are loaded from disk, but lines typed at the keyboard are also compiled as they are entered. Syntax checking is carried out, and many errors are caught and flagged immediately. The syntax checking is thorough, but it is not complete, as typing mistakes often make sense to the compiler even though they are not what was intended. Keywords are capitalized if they are recognized, and this is a great assistance in spotting errors, especially if variable names are entered in lower case. It is possible to turn off syntax checking if desired.

The incremental compilation also provides an interesting facility for confirming variable names. Each variable is apparently stored as a reference to a name table, because changing the capitalisation of a variable name causes an immediate change in all displayed instances of the variable name. So if you use TempVar as a variable, then later re-type it as Tempvar all occurrences of TempVar are immediately converted to Tempvar.

Once the program is loaded the editing facilities are certainly comprehensive. The editor supports most of the WordStar command set, with the exception of search/replace, file handling and blocks.

AS	CALL	CASE	CLEAR	CLNG
CLS	COLOR	CONST	CVL	CVSMBF
CVDMBF	DECLARE	DEFLNG	DIM	DO...LOOP
EXIT	FILEATTR	FREEFILE	FUNCTION	GET
LCASE$	LEN	LSET	LTRIM$	MKL$
MKSMBF$	MKDMBF$	OPEN	PALETTE	PUT
RTRIM$	SCREEN	SEEK	SELECT	CASE
SETMEM	STATIC	TYPE	UCASE$	VARPTR
VARSEG	WIDTH			

Table 1. *New or changed commands in QuickBasic Revision 4.*

The first two are adequately catered for with menu selections, but I still find the WordStar method of block marking, copying and moving preferable to the select/cut/copy/paste procedure provided in QuickBasic.

Cutting or copying a piece of the program to the scrapheap is simple. But I find I frequently overwrite the scrapheap with an edit or two before I am ready to paste, so that the cut or copied text is lost. A macro facility, which would would eliminate this problem, is not provided.

For those not raised on WordStar, the editor supports option selection through the drop-down menus, as well as a full set of function key commands and the mouse. The QuickBasic editor has always been easier to use with a mouse than any other way, but now keyboard usage is perfectly practicable. All of the bugs in the editor that I remember from previous versions appear to have been eliminated.

Debugging

Debugging facilities include a watch facility, TRON and TROFF with optional animation, breakpoints, single stepping, procedure stepping and history. Programs can be started, stopped at a point and continued from that point or elsewhere.

A 'stack backtrace' display shows procedure (SUB and FUNCTION) calls that were made to arrive at the current point in the program, and program execution can be continued through any level of procedures until a specific level in the stack is reached. An executable file that is CodeView compatible can be created, although this is one of the few facilities that cannot be invoked from within the environment.

Including debugging facilities slows program execution, in some case quite dramatically, but often that is just what is required. TRON and TROFF or breakpoints can always be used to isolate the debugging to a small portion of the program. An 'immediate' window is available to permit testing of code one line at a time, or for the evaluation of expressions. It can also be used to examine and set variables in the program being debugged.

It is possible to edit a program being debugged and continue running, although there are some types of edits that will force a re-start. The editor provides a warning if this is about to happen, and the edit can be canceled.

When it comes to constructing the program, the most distinctive differences from version 3 is in functions and subprograms. These are now referred to as procedures, and are prepared and edited as separate text screens. Simply typing SUB subprogram is enough to instruct the editor to build a separate procedure with an edit screen of its own, and to fill in the default DEFtype and END SUB statements. The cursor is left at the end of the procedure name in the new text screen, ready for the entry of STATIC and the body of the procedure. In the main program a declaration of the subprogram has been inserted at the start of the code.

As the program is developed the editor maintains a list of the procedures, making access to the individual edit screens quick and easy. When the file is saved all the procedures are saved with it, presumably as separate modules on the end of the main program. A windowing facility is provided, making it easy to keep the main program and one procedure visible.

Subprograms that have been DECLAREed in the main module can be referenced without the CALL statement. Therefore, a statement such as Print.At 4, 19, A$ can be used. Declaring subprograms and functions also invokes parameter type checking.

Functions

Functions are now clearly distinguished from DEF FN, both the one line and the multi line versions. There is no longer a need for multi line DEF FN, and it appears that functions are just as effective as single line DEF FN. The advantages of the new style functions include recursion, parameter passing by either value or reference, complete control over variable scope, parameter type checking and no restriction on naming.

By combining the use of subprograms and functions, QuickBasic code can become very dense without being opaque. For instance, the lines –

```
IF GetResponse(22,30,"Continue ? ") THEN
    Process a$, n
ELSE
    GOTO ReStart
```

can prompt the operator, get a response, validate it and branch accordingly. All the detail work is done in the subprograms and functions.

The other major change to the language is the introduction of the binary file access type. To complement the binary file mode a seek function has been provided as well as user-defined record types, but the use of these two facilities is not restricted to binary files.

A file opened in binary mode is accessed with GET and PUT statements. However, unlike random mode, the statements include a variable that determines how many bytes will be transferred and the format in which they will be interpreted. Thus –

```
GET #1,1,I%
```

will read two bytes from position 1 in the file into integer I%. Files opened in binary mode do not have a record length specified, so the GET and PUT statements can reference any absolute byte position in the file.

The SEEK function returns the current byte position of the binary file pointer, and the SEEK statement positions the file pointer to the indicated byte position. SEEK also works for sequential access files, and it can be used for random access files, although in this case the argument is a record number rather than a byte position.

Fixed-length string

To help support binary file transfers a new variable type of fixed-length string has been introduced. If I$ has been declared to be fixed length 10, then GET#1,,I$ will read 10 bytes from the current file pointer position into I$. If the string variable was not a fixed length string, then the number of bytes read is determined by the current length of the string. This means that a genuine variable length record storage mechanism could be easily implemented.

The user-defined variable type, or RECORD, supports both random and binary files. For random files, the record definition is just another way of laying out the FIELD statement. The difference is that the record definition assigns a record name and allocates storage separate from the file buffer. Thus, the variable must be associated with the record name, and used in the GET or PUT statement. For binary files, the FIELD statement is not available, and all I/O must be through either a simple variable or a record variable.

Records can contain simple numeric variables and fixed length strings. They cannot contain arrays, which is a major restriction that seems unnecessary, as the code needed to support a numeric array must be very similar to that required for a fixed length string. It is possible to have arrays of records – indeed the DIM statement is used to associate a variable name with the record type, although the default size of the 'array' is 1. Each element of the record is accessed using the record name, a full stop and the variable name. A typical example might be –

```
TYPE EmpData
     Name AS STRING * 30
     Age AS INTEGER
END TYPE
DIM Employee AS EmpData
OPEN "STAFF.DAT" FOR BINARY AS #1
GET #1, , Employee
IF Employee.Age > 65 THEN . . .
```

Notice that in this case the file is opened in binary mode, so if non-sequential access is required the program must use SEEK to keep track of the file position. This would be preferable to random mode if, for instance, each EmpData record was followed by a number of other records of different sizes relating to the same employee. If all records in the file were the same length, random access would be somewhat simpler.

In addition to these major changes, there are many small alterations to the language. The revised or new keywords are in Table 1, and include things like changes to constant declarations, additional string functions, support for EGA 43-line mode as well as VGA, new control structures and improved facilities in SELECT . . . CASE.

Documentation

The documentation for QuickBasic is split into three soft cover bound volumes. They are a language reference, 'Learning and Using' and 'Programming – Selected Topics'. Like QuickBasic itself, they appear to be a complete rewrite that nonetheless draws heavily on what has gone before. Much of the language reference is identical with previous releases – indeed, a lot of it would be familiar to BasicA users, although the samples have all been rewritten in QuickBasic style.

The other two volumes are largely new. They are well laid out and appear to be both complete and accurate – the 'Selected Topics' volume, in particular, covers a lot of ground with references to example programs that are listed in the book as well as supplied on disk.

QuickBasic requires a minimum of 320 kilobytes of memory. Although it will load and run with 256 Kbyte, there is very little room for programs.

QuickBasic can now claim to be a mature and complete product. Revision 1 was clearly incomplete when it was rushed to market, with a lot of bugs and nearly useless documentation. Revision 2 fixed some of the bugs and improved the documentation, but it was still a partial implementation. Revision 3 was much more complete, but showed some ugly features of its heritage, and the documentation had again slipped. With the current Revision, the promise of the earlier versions has been delivered largely without the scars of its difficult growth, and the documentation that promise.

Unless the low-level power and the compatibility of C are essential, or there are significant pedagogic reasons for taking up Pascal, QuickBasic deserves to be the language of choice for programmers in the MS-DOS world who have moved beyond BasicA. It is a tool that is both powerful and pleasant to use. □

A PALETTE full of colour . . .

Jeff Richards shows how to manipulate QuickBasic's PALETTE statement to create striking effects . . .

THE PALETTE statement in QuickBasic can make an EGA screen perform striking effects to enhance your programs. The most common application for the Palette statement for EGA screens seems to be in creating dazzling effects that compete to outdo each other in their garishness. QuickBasic 4 comes with several such examples. However, the Palette statement can be used for more worthwhile tasks than demonstrating just how startling the EGA display can be.

The EGA screen in mode 9 can generate 64 different colours – but only 16 can be displayed at any one time. The current range of displayable colours is referred to as the current palette, and the Palette statement controls which of the 64 colors are in the current palette.

The typical use for this facility is to permit more precise shadings. For instance, light blue is colour 9, but a beach scene that needs a sky-blue colour can adjust the palette so that when colour 9 is selected, just the right shade of blue appears. If a different sort of blue is needed in the next scene, the palette can be adjusted as the scene changes.

However, the colour numbering scheme is not fixed. For a rural scene it might be necessary to include several shades of green. Because of the limit of 16 colours, some other colours – perhaps red – will have to be left out. Careful definition of the palette can produce very effective display screens.

Blinking

The procedures presented here are much simpler, but nonetheless can make good use of the PALETTE command to produce more effective screen displays and simplify programming. The first example (Listing 1) shows how blinking might be implemented in the graphics screen. In this case the palette numbers from 8 to 15 have been set to colours 0 to 7, reducing the number of displayable colours to 7 plus black. This is done by setting up an array (PALARA) and then using the PALETTE USING command to copy the whole array into the palette at once.

The first part of the program draws some squares. Each square has another square drawn inside it using a different palette number, but as the two palette numbers represent the same colour, the

```
DEFINT A-Z: DIM PalAra(15)
FOR I = 0 TO 7
    PalAra(I) = I: PalAra(I + 8) = I
NEXT I
SCREEN 9
PALETTE USING PalAra(0)
FOR I = 0 TO 7
    LINE (I * 80 + 2, 0)-(I * 80 + 80, 60), I, BF
    LINE (I * 80 + 20, 15)-(I * 80 + 60, 45), I + 8, BF
NEXT I
ON TIMER(1) GOSUB SwPal: TIMER ON
WHILE INKEY$ = ""
FOR I# = 0 TO 6.28 STEP .01
    LINE(320, 225)-(320+(120*SIN(I#)),225+(80*COS(I#))),j
    j = (j + 1) MOD 8
NEXT I#
WEND
STOP

SwPal:
    IF red = 0 THEN red = 4 ELSE red = 0
    PALETTE 12, red
    RETURN
```

Listing 1. *A QuickBasic program to implement blinking in a graphics screen.*

inner square is indistinguishable from the outer one. Then a routine is set up to be called once every second on the timer interrupt. The routine flips palette number 12 from colour red to colour black. The effect is that the centre of the red square blinks once per second. The display at the bottom of the screen is simply a visual demonstration of how fast the colour change operation is.

Of course, the same effect could have been achieved by redrawing the inner square each time the routine was called. The advantage of using the palette number is that the blink routine does not need to know which parts of the screen to redraw – it simply blinks any region that was drawn using palette number 12.

Another advantage is that the time needed to execute the blink will not increase as the blinking area increases, as it would if each area had to be re-drawn.

Of course, the colour change need not be to black – any colour could be mapped into the selected palette number. Alternating a colour with its high-intensity counterpart produces a very distinctive display, especially at the slow blink rate involved.

Manipulating the palette can also be used to create an invisible border for shapes to be painted. The border is defined by the palette number, not the assigned color – for instance –

```
PALETTE 15,0
CIRCLE (100,100),25,15
PAINT (100,100),4,15
```

– will assign black to palette number 15, and then draw a black circle and fill it with red. While there is not much point in this for something as simple as a circle, it can be very useful for more complex shapes that should appear to fill instantly, rather than being carefully drawn line-by-line.

This technique is used in the program in Listing 2. Eighteen circles are drawn and filled using six palette numbers – but each palette number has been assigned the color black. After the circles are drawn each of the six palette numbers is remapped to red in turn, giving an illusion of balls chasing around in a circle.

Note how the PALARA element is set back to colour 0 (invisible) immediately after the Palette Using statement. This avoids having to remember which was the last element made visible, and re-setting it, each time the loop is started. Of course, any changes made to the PALARA elements have no effect until the next Palette Using statement is executed.

Remapping

Listing 3 is an example of how a menu program might use palette remapping to indicate which of several options the operator has selected. Each option is displayed using a different palette number, but each one has been set to bright white. When the operator makes a selection the palette number corresponding to the option number is set to red, and the option is highlighted automatically. The Palette Using statement is used in this case, as this sets all palette numbers, and removes the highlighting from whatever option has been previously selected.

These examples give some idea of the possibilities available in the Palette statement, but there are many other effective and dramatic displays that the EGA and QuickBASIC can produce. □

```
DEFINT A-Z: DIM PalAra(15)
FOR i = 0 TO 7
    PalAra(i) = i: PalAra(i + 8) = 0
NEXT i
PalAra(4) = 0
SCREEN 9
PALETTE USING PalAra
FOR i# = 0 TO 6.28 STEP .35
    X# = 320+(180*SIN(i#)): Y#=150+(125*COS(i#))
    CIRCLE (X#, Y#),.25, 4
    PAINT (X#, Y#), j + 9, 4
    j = (j + 1) MOD 6
NEXT i#

WHILE INKEY$ = ""
    FOR i = 9 TO 14
        PalAra(i) = 4
        PALETTE USING PalAra
        PalAra(i) = 0
    NEXT i
WEND
STOP
```

Listing 2. *In this listing, eighteen circles are drawn and filled using six palette numbers – but each palette number has been assigned the color black. After the circles are drawn each of the six palette numbers is remapped to red in turn, giving an illusion of balls chasing around in a circle.*

```
DEFINT A-Z: DIM PalAra(15)
FOR J = 1 TO 9: PalAra(J) = 15: NEXT J
SCREEN 9
PALETTE USING PalAra
FOR J = 1 TO 9
 LOCATE 5 + J, 30
 COLOR J
 PRINT "SELECTION #"; J
NEXT J

DO
 J$ = INPUT$(1)
 IF J$ = CHR$(27) EXIT DO
 J = VAL(J$)
 IF J > 0 THEN
    IF J < 10 THEN
        PalAra(J) = 4
        PALETTE USING PalAra
        PalAra(J) = 15
    END IF
 END IF
LOOP
SYSTEM
```

Listing 3. *An example of how a menu program might use palette remapping to indicate which of several options the operator has selected.*

LARRY LEWIS

THE PROPHET

Here I go again, soapbox engaged ... One of the System Operators (SysOps) in FidoNet made the comment that Bulletin Boards had reached saturation point in Sydney, meaning that there were just too many boards for people to use. While there are a lot of boards around, the use of systems by the public still hasn't peaked – there are still a lot a people out there who don't have a modem; there are *even* a few who don't have computers.

I just had a quick look at the number of boards with the 02 STD (Sydney) prefix – there are about 100 running at present. With the population of Sydney well over 3 million, that gives us one BBS per 30,000 people. Sounds good, but all it means is that there is still plenty of room.

What *does* concern me is the growing numbers of 'commercial' Bulletin Boards starting up. By commercial I mean those that are run by a company to provide support for products sold by it. We have enough trouble now trying to show the various authorities that most BBS SysOps run their boards for fun and should therefore be treated as a hobbyists and not as a commercial venturer. We don't need the issue further clouded by money making operators starting up.

Until now Bulletin Boards have been exempt from Telecom (and any other authority's) service levies because of the 'hobbyist' status. The risk is that if the commercial boards proliferate, all boards may be 're-classified.' At one stage I estimated it would cost me over $250 a day to keep Prophet running if the various proposed charges went ahead – any sort of charge where the BBS pays (and not the caller), would mean that most of those 100 boards in Sydney would have to close down.

Public Domain used to be free

Do you run any software that has been placed into the Public Domain by the author? How about Shareware and Freeware? Looking at my software collection, I have some commercial stuff, but there are literally hundreds of programs that have cost me next to nothing! These have been collected from bulletin boards, friends and authors. Why do these people write programs for almost nothing – much of the software is as good as packages costing hundreds of dollars

It must be because they get pleasure from programming and having people use what they have created. With very few exceptions, these developers haven't gotten rich from their work. Sorry, I tell a lie, they get rich, but not on money – satisfaction and pleasure.

Unfortunately, some of the 'disk copy shops' are taking advantage of Shareware. Now there is a real need for the type of service these companies offer – people without modems (or who have slow modems) or who live in a remote area with high STD charges to everyplace, can't get software from their local bulletin board.

While most of shops are honest in that they pay Shareware author's a reasonable price for their work, it's come to my attention that there are a few disreputable ones around that are not playing fair – they're keeping all (or most) of the proceeds for themselves. I've come across several instances lately where users have paid for programs from one of these shops, thought they were then registered for upgrades, and discovered that the 'registration' was meaningless. Some software authors have changed their licence arrangements to stop this rip-off; it's a pity none seems to have the money to sue the shonks.

So, don't be ripped off (and don't let those authors be ripped off, either). As I said, most of these shops are honest in every respect – which means that they're not going to mind you asking what arrangements they've made to pay for the Shareware they copy for you, right?

Any such fees against the community based non-commercial systems would mean the death of most of the systems that you use almost overnight.

Newer! Faster! Better!

Almost every day I read about the latest whizz bang piece of hardware that goes twice as fast as a Cray for the price of a handheld calculator and software that is even more user friendly, faster, cheaper and more efficient than the one you have been using for years . . months . . even days.

But, I discovered years ago that Newer! Faster! Better! isn't always the answer. Know what I am using to write this? WordStar, simply because it was the first 'word processor' I ever bought and it does what I need (most of the time) and it doesn't cost me any more. And the same could be said for my other favourites.

I have only just bought AT type machines to replace my XT clones – and that was because the XTs were worn out and not because I only wanted something faster. Don't get me wrong: if there is something really mouth watering out there I'll lust after it, but just remember that new isn't *always* better.

ARC vs. PKARC

Maybe you have heard of Thom Henderson and his company, System Enhancement Associates Incorporated (SEA), the publishers of ARC, the file storage system. SEA has sued PKWARE Incorporated for breach of copyright, unfair competition and trademark violation. What's so unusual about another American litigation? ARC is Shareware.

In effect, SEA has showed that Shareware software has the same status as commercial software and that other developers cannot take your idea and make money from it without payment of royalties.

PKWARE has been required to pay damages and litigation expenses to SEA. The actual full agreement has been placed under seal but existing users of PKARC have been retrospectively li-

cenced by SEA and until January 1989, others may continue to 'licence' PKARC; after that no more licences may be issued. Also, after this date PKWARE will not be permitted to distribute any ARC compatible products.

Also, PKWARE are to cease using the SEA trademark 'ARC' and will have to change the name of existing programs so that ARC is not used. A licence for SEA to use the source of the PK programs has also been issued by PKWARE.

This may seem like a lot of sour grapes on the part of SEA since the PK series of programs seemed to be quicker and offer greater compression in some cases, but, on the whole, the precedent of a Shareware developer protecting his copyright and trademark can only encourage others to develop Shareware programs.

SysOp sues user

A SysOp from New Mexico in the US has sued one of his users for uploading a program that contained a 'Trojan Horse', a program that seems to be normal but when run on your computer does things to destroy data, like formatting hard disks and deleting files. This might be another landmark type of legal action. □

Primary electronic collection points

The last full listing was given in the October 1988 issue; refer to the Services page on how to obtain Back issues.

ACT– PC Exchange RIBM
(062) 58 1406
NSW – Prophet TBBS
(02) 628 5222
Vic.– Brainstorm Australia
(03) 758 7086
Qld. – AMPAK RCP/M
(07) 263 7070
SA – The Electronic Oracle
(08) 260 6222
WA – Nemo Multiple BBS RAPL
(09) 370 1855

NEW SOUTH WALES

***** Amended *****
2000 and Beyond TBBS
Sysop: Greg Kuhnert
Phone: (02) 522-6514
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem VA
Computer: System One
DOS: CP/M
BBS*oftware*: TBBS

***** NEW System *****
3M Australia Pty Ltd
Sysop: Graham Stair
Phone: (02) 498-9184
Baud: V21 V22 V22bis B103 B212
Hours: Weekdays: 1900 – 0700Weekends: 24 Hours

***** NEW System *****
Albury Connection
Sysop: George Rhedey
Phone: (060) 21-6005
FIDO*net*: 712/204
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: PC DOS
BBS*oftware*: Opus

***** Offline *****
Alpha Juno BBS

***** Name Changed *****
Amiga Zone BBS
Note: Now Called Multicomm Amiga BBS

***** Amended *****
Apolloline BBS
Sysop: Richard Heppell
Phone: (02) 869-8349
Baud: V21 V22 V22bis V23 B103 B212
Access: Reg VA
Computer: Macintosh
DOS: HFS
BBS*oftware*: Red Ryder Host

***** Amended *****
Bramblebush
Sysop: Ken Allan
Phone: (02) 829-1809
Baud: V21 V22
Access: Mem Reg LVA
Computer: Clone88 turbo
BBS*oftware*: Opus

***** Offline *****
Cesspit RAPL

***** Amended *****
Club Amiga BBS
Sysop: Ross Kellaway
Phone: (02) 521-6338
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem LVA
Computer: Amiga 1000
DOS: AmigaDOS
BBS*oftware*: BBS-PC!

***** NEW System *****
Computrol
Sysop: Robert Spence
Phone: (02) 489-6848
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: GTPower

***** Amended *****
Eagle One BBS
Sysop: Terry Harvey
Phone: (02) 745-3190
FIDO*net*: 712/704
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: IBM AT Clone
DOS: MS DOS
BBS*oftware*: Opus

***** NEW System *****
FairStar BBS
Sysop: Robert Thomas
Phone: (02) 570-4555
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem VA
Hours: Weekdays: 1600 – 0830Weekends: 24 Hours
Computer: Commodore PC-10
DOS: MS DOS
BBS*oftware*: Wildcat

***** Offline *****
Home Base BBS

***** Offline *****
Hornet Amiga BBS

***** Amended *****
Lodestone BBS
Sysop: Ian McWhirter
Phone: (02) 456-3264
FIDO*net*: 711/407
Baud: V22 V22bis B103
Access: Reg
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: Opus

***** Amended *****
MicroBASE BBS
Sysop: Dave Whiteman
Phone: (047) 35-2415
FIDO*net*: 713/305
Baud: V21 V22 V22bis V23
Access: Mem VA
Computer: IBM XT Clone
DOS: MS DOS
BBS*oftware*: QuickBBS

***** Amended *****
Multicomm Amiga BBS
Sysop: Richard Duffy
Phone: (02) 771-6351
Baud: V22 V22bis B103 B212
Access: Mem LVA
Computer: Amiga 1000
DOS: Amiga
BBS*oftware*: BBS-PC!

***** NEW System *****
Omega Board BBS
Sysop: Paul Speirs
Phone: (02) 792-1526
Baud: V21 V22 V22bis V23 B103 B212
Access: Reg
Computer: Amiga 500
DOS: AmigDOS
BBS*oftware*: BBS-PC!

***** Offline *****
PC Users Group – Westpac Board

***** Amended *****
Playground BeeBS
Sysop: Brett Selwood
Phone: (02) 534-6944
FIDO*net*: 712/504
Baud: V21 V22 V22bis V23 PEP
Access: Mem Reg LVA
Computer: IBM AT Clone
DOS: MS DOS
BBS*oftware*: Opus

***** Amended *****
Prophet TBBS
Sysop: Larry Lewis
Phone: (02) 628-3959
FIDO*net*: 713/600
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: PC DOS
BBS*oftware*: TBBS

***** Amended *****
Scorpio BBS
Sysop: Russ Morrison
Phone: (02) 831-3249
FIDO*net*: 713/604
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM AT Clone
DOS: MS DOS
BBS*oftware*: Opus

***** NEW System *****
Silicon City
Sysop: Ted Harrison
Phone: (02) 713-7891
FIDO*net*: 712/705
Baud: V21 V22 V22bis
Access: Public
Computer: Ultra AT
DOS: MS DOS
BBS*oftware*: Opus

***** NEW System *****
South Coast Amiga BBS
Sysop: Michael Inglis
Phone: (042) 61-4612
Baud: V21 V22
Computer: Amiga 1000
DOS: AmigaDOS
BBS*oftware*: BBS-PC!

***** Amended *****
Tachyonics
Sysop: Richard Lenz
Phone: (02) 438-2682
Baud: V21 V22
Access: Reg VA
BBS*oftware*: Fido

***** Amended *****
The Baud Walk
Sysop: Gary Blythe
Phone: (02) 868-5885
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: Wang PC240
DOS: Wang DOS
BBS*oftware*: GTPower

*** NEW System ***
The Commodore Spot
Sysop: Chalk
Phone: (02) 534-5565
Baud: V21
Access: Reg VA
Computer: C-64
BBSoftware: KBBS
*** Offline ***
The Exchange KBBS
*** NEW System ***
The Pig Pen BBS
Sysop: Michael Pigram
Phone: (02) 630-3693
Baud: V21
Access: Public
Hours: Weekdays: 1900 – 2230Weekends: 0430 – 1130
Computer: C-64
BBSoftware: Hal
*** Amended ***
The Runway
Sysop: Colin Lean
Phone: (02) 569-5130
FIDOnet: 712/506
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM XT
DOS: PC DOS
BBSoftware: Opus
*** NEW System ***
The Twilite Zone
Sysop: The Mystic Machine
Phone: (065) 72-3970
Baud: V21 V22 V23
Access: Reg VA
Hours: Weekdays: 2100 – 0600Weekends: 24 Hours
Computer: Apple IIe
DOS: PRODOS
BBSoftware: GBBS
*** NEW System ***
Wollongong Amiga BBS
Sysop: Peter Nicholson
Phone: (042) 27-3927
Baud: V21 V22
Hours: Weekdays: 1730– 0800Weekends: 24 Hours
Computer: Amiga 2000
DOS: AmigaDOS
BBSoftware: BBS-PC!

NEW ZEALAND

*** NEW System ***
Love Over Gold
Sysop: Jeremy Scrivener
Phone: (04) 277-900
FIDOnet: 771/100
Baud: V21 V22
Access: Mem VA
Computer: IBM XT Clone
DOS: PC DOS
BBSoftware: Opus
*** NEW System ***
Planet-Patrol
Sysop: Mark Stephens
Phone: (09) 60-8408
Baud: V22
BBSoftware: Wildcat
*** Amended ***
Poly Vox III
Sysop: Darrin Gordon
Phone: (03) 79-1917
Baud: V21 V22 V22bis
Access: Reg
Hours: Weekends ONLY
Computer: IBM PC Clone
DOS: MS DOS
BBSoftware: Opus
*** NEW System ***
The Guide
Sysop: Steve Davis
Phone: (03) 43-0461
FIDOnet: 770/201
Baud: V22 V22bis
Access: Reg VA
Hours: Weekdays: 1800 – 1000
BBSoftware: GTPower
*** NEW System ***
The Plains
Sysop: Steve Mellis
Phone: (03) 52-5930
FIDOnet: 770/400
*** NEW System ***
Tony's BBS
Sysop: Tony Hall
Phone: (03) 83-1155
FIDOnet: 770/101

NORTHERN TERRITORY

*** Offline ***
Outback RCPM

QUEENSLAND

*** NEW System ***
AARTEC Industries 2097
Sysop: The Shadow
Phone: (07) 283-3061
Baud: V21
Access: Mem VA
Hours: Daily: 1900 – 0700
*** Amended ***
Access North Queensland
Phone: (070) 51-0566
Baud: V21 V22 V23
Access: Reg LVA
Computer: IBM XT Clone
DOS: MS DOS
BBSoftware: CMVideoTeX
*** NEW System ***
Coelurus BBS
Sysop: Peter Brewer
Phone: (075) 63-2621
Baud: V22 V22bis
Access: Reg VA
Hours: Weekdays: 2100 – 0800Weekends: 24 Hours
Computer: IBM XT Clone
DOS: MS DOS
BBSoftware: Opus
*** NEW System ***
Stanley's Place
Sysop: John Wain
Phone: (07) 264-4747
Baud: V21 V22 V22bis
Access: Reg VA
Computer: IBM XT Clone
DOS: MS DOS
BBSoftware: Opus
*** NEW System ***
Transcendental Connection
Sysop: Kenneth Page
Phone: (07) 281-9418
Baud: V21 V22 V23
Access: Reg VA
Computer: C-64
BBSoftware: BBS64

SOUTH AUSTRALIA

*** Amended ***
The Bureau BBS
Sysop: Patrick Browne
Phone: (08) 258-2002
FIDOnet: 681/855
Baud: V21 V22 V23
Access: VA
Computer: Kaypro XT
DOS: MS DOS
BBSoftware: Opus
*** Offline ***
The Hackers Retreat
*** Amended ***
The Olympic Board
Sysop: Greg Sanderson
Phone: (08) 265-4232
FIDOnet: 680/801
Baud: V21 V22 V22bis
Access: Public
Computer: IBM AT Clone
DOS: PC DOS
BBSoftware: Opus

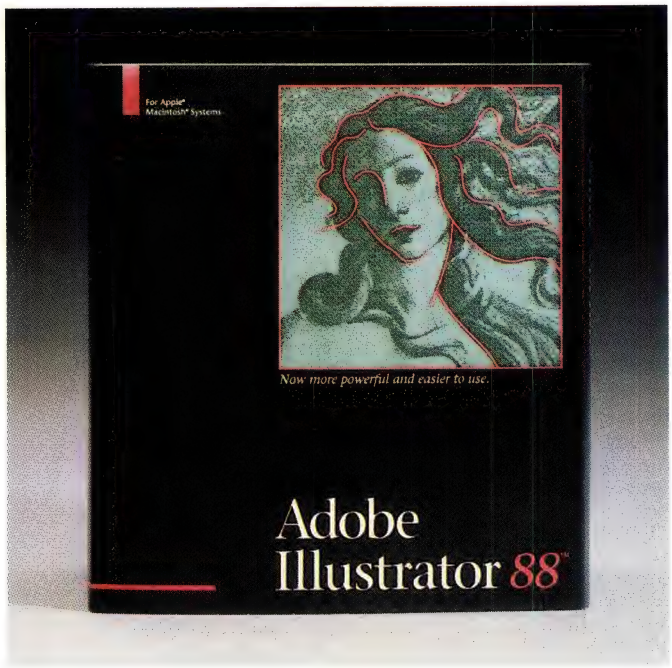
VICTORIA

*** Amended ***
Crystal Symphony Opus
Sysop: Greg Jones
Phone: (03) 874-4176
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem VA
Hours: Daily: 2200 – 0700
Computer: IBM XT Clone
DOS: PC DOS
BBSoftware: Opus
*** NEW System ***
Doodz Domain
Sysop: Lance Link
Phone: (03) 646-5861
Baud: V21 V22 V22bis V23
Access: Public
BBSoftware: Opus
*** NEW System ***
Dragon City BBS
Sysop: Mal Fields
Phone: (054) 47-0398
Baud: V21 V22 V22bis V23
*** Amended ***
Micom BBS
Sysop: Peter Jetson
Phone: (03) 762-5088
FIDOnet: 633/371
Baud: V21 V22 V22bis V23
Access: Mem Reg
Computer: IBM Clone
DOS: MS DOS
BBSoftware: Opus
*** Offline ***
MIN-NET BBS
*** Online ***
PC Connection IBBS
Sysop: Lloyd Barrett
Phone: (03) 388-0909
Baud: V21 V22 V22bis V23
Computer: IBM XT
DOS: MS DOS
BBSoftware: IBBS
*** NEW System ***
Peninsula Colour Computer Club BBS
Sysop: Stan Blazejewski
Phone: (03) 551-5131
Baud: V21
Hours: Daily: 2130 – 0700
Computer: Tandy CoCo 1
*** Amended ***
Software Bank
Sysop: Simon Walsh
Phone: (03) 820-1632
FIDOnet: 632/340
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: IBM XT Clone
DOS: PC DOS
BBSoftware: Opus
*** Amended ***
Telegraph Road BBS
Sysop: Craig Wilson
Phone: (03) 743-6173
Baud: V21 V22 V22bis V23
Access: Reg LVA
BBSoftware: QuickBBS
*** Amended ***
The Graveyard BBS
Sysop: Jason Caley
Phone: (03) 706-7902
Baud: V21 V22 V22bis V23
Access: Reg LVA
DOS: RSDOS
BBSoftware: Digits
*** Offline ***
The Magic Pudding
*** Amended ***
Thongheads Welfare BBS
Sysop: Thongers
Phone: (03) 419-2385
Baud: V21 V22 V22bis
Access: Reg
Hours: Weekdays: 2200 – 0600Weekends: 24 Hours

WESTERN AUSTRALIA

*** Amended ***
Oasis ST BBS
Sysop: Lou Schillaci
Phone: (09) 430-5431
Baud: V21 V22
Access: Mem LVA
Computer: Atari
*** Amended ***
Perth Omen
Sysop: Mark Dignam
Phone: (09) 244-2111
Baud: V21 V22 V22bis V23 V23ORG
Access: Mem Reg
Computer: TRS-80
DOS: NewDOS
BBSoftware: Omen TRBBS
*** Offline ***
WA Atari BBS

NEW PRODUCTS



Software

Adobe Illustrator 88 △

InfoMagic
Phone: (02) 975 1044
Price: $999 taxed

InfoMagic has announced that Adobe Illustrator 88, the latest graphics product from Adobe Systems, is now shipping in Australia. Adobe Illustrator 88 is a PostScript software-based drawing package, designed to assist novice and professional artists to easily produce high quality illustrations.

All the tools of the original Adobe Illustrator are included, along with several other tools and features. To simplify the drawing process, Adobe has added an auto-trace tool which can automatically trace over a bit-map image. Once the image has been traced, the user can easily modify it with other Adobe 88 tools. Also new is the blending tool and a resolution-independent pattern-fill feature.

Microsoft

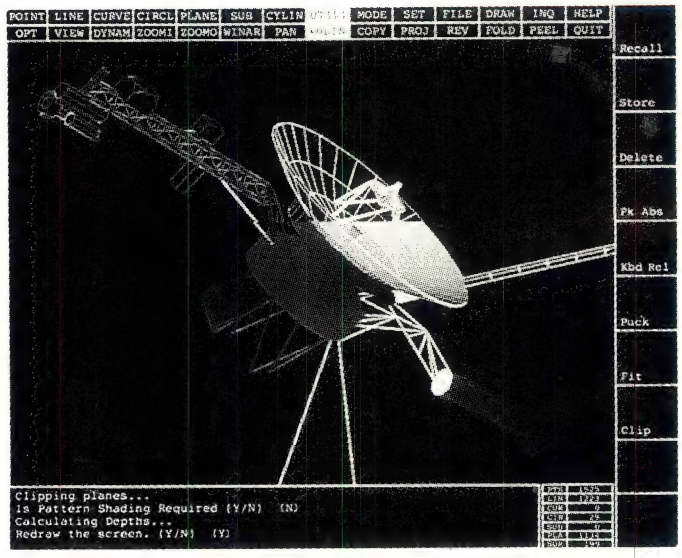
Microsoft Word 4.0 for the Mac

Microsoft
Phone: (02) 452 0288
Price: See below

A new version of Microsoft Word for the Apple Macintosh was released in October. Word 4.0 will run on any Mac with 512 Kbyte of RAM and two 800 Kbyte floppy drives or a hard disk.

New features include Page View, a full WYSIWYG editing environment; tables for easy postioning of side by side paragraphs, numbers or graphics; automatic repagination; the ability to flow text around objects; full ability to customise the user interface; colour support and automatic linking with Microsoft Excel and Microsoft Mail.

Every package of Word 4.0 includes the Word Finder thesaurus and the AutoMac macro program, which allows users to automate any sequence of frequently used commands. Microsoft Word 4.0 for the Mac is priced at $695 untaxed; an upgrade to registered users of 3.x is $175. Free upgrades to registered users are available if licenced after July 1.



Qikdraw software △

RCS Design
Phone: (03) 49 6404
Price: Not supplied

RCS Design has released three more packages in the Qikdraw suite of software. The new packages are Build, Steel and Garage. The packages are specific interfacing programs to allow the Qikdraw user more power and flexibility. Demonstrations of the Qikdraw package can be arranged though RCS Cad Centre, 78 Heidelberg Rd, Alphington 3078 Victoria.

Qwiknet ▽

PSDI Australia
Phone: (02) 923 1344
Price: Not supplied

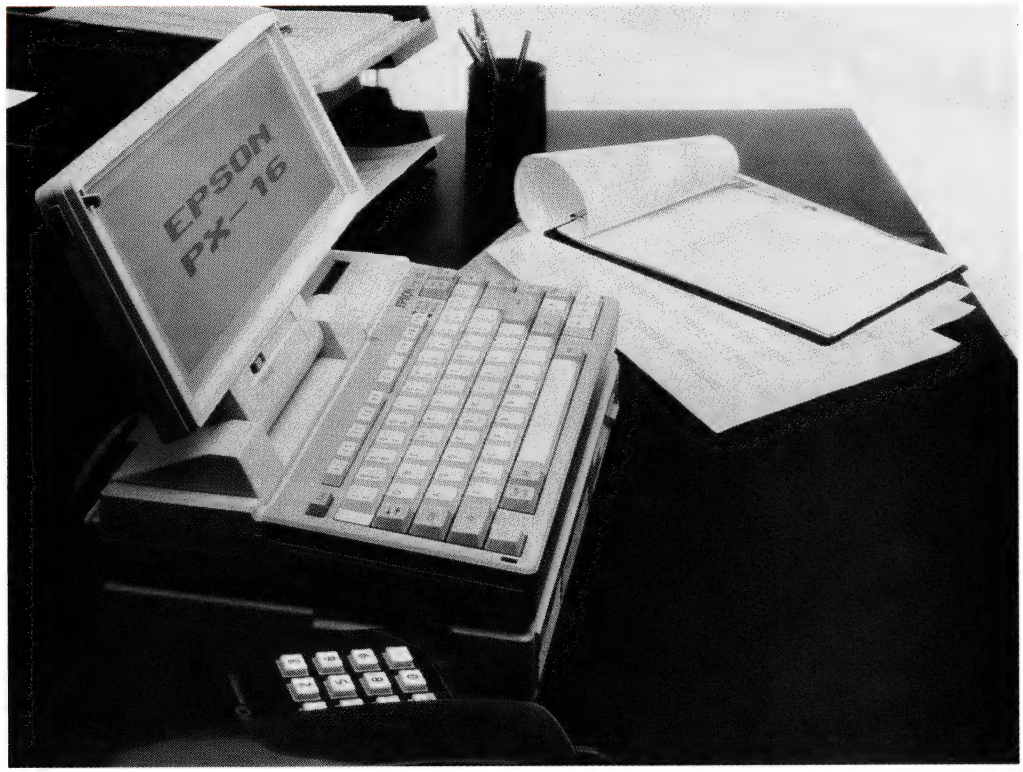
The Qwiknet Professional project management software is now available as a LAN version. The LAN version keeps workgroup and other team members updated on the status of the entire project, identifies problems before they happen and gives instant analysis of 'what if' scenarios. Team members can also receive updates as soon as they are filed.

The LAN version offers the same features as Qwiknet Professional, such as a mouse option and windowing system for ease of use; interactive interface for immediate 'what if' analysis; multi-project scheduling (up to 250 projects); large capacity and fast response and four scheduling options for maximum flexibility: critical path method, time limited, resource limited and priority scheduling.

Take Charge

Logo Computer Centre
Phone: (02) 819 6811
Price: $299 taxed

Version 1.1 of Take Charge desktop organiser has been released. The program has a DOS shell and menu system, notepad, calculators, roladex and all the other SideKick-style facilities. The new package adds communications and a highly flexible 'command stack' – for people who use a lot of DOS commands.



Drawbridge

Microway
Phone: (03) 555 4544
Price: $346 taxed

Drawbridge is a code generating graphics editor that increases programmer productivity by automatically generating the sourcecode required to create complicated graphics displays. The program allows the user to view the image as it is created and to modify the display with a variety of advanced editing features.

With Drawbridge, you simply draw the image on the screen with a mouse and the program generates the code to recreate it in a program. Graphics objects and special effects are selected using the program's pull down menus. Objects include arcs, boxes, circles, lines and polygons. All objects may be in colour and can be either outlined or painted. A text editor is built in to Drawbridge to allow the addition of text to graphics displays.

Parrot Software
Phone: (062) 88 9392
Price: $30 per package

Parrot Software has recently released five new software packages: Banana Party, Potato Picker, Spinach Speller, Like and Prepositions. Each is for use with infants, primary or special education classes. All five packages work on BBC microcomputers. They cover a wide section of the curriculum, including programs to help children with their spelling, programs which assist children to write simple sentences and a program to teach about attribute blocks. The packages are based on a philosophy of giving children positive reward for their efforts.

SuperProject Expert

Micro Australia
Phone: (02) 736 3299
Price: Not supplied

SuperProject Expert offers advanced features for planning, tracking and co-ordinating complex projects that require extensive reporting. Features includes outline and work scheduling; job oriented scheduling; advanced scheduling; comprehensive resource management; true multi-project capability and detail costing information.

SuperProject Expert supports the IBM PS/2 line of computers as well as IBM PC, XT, AT and full compatibles. Both 3½ inch and 5¼ inch disk formats are provided. It requires at least 320 kilobytes of RAM with two double sided disks or one 3½ inch disk drive. A hard disk is recommended for extensive use.

SuperCalc5

Micro Australia
Phone: (02) 736 3299
Price: $822.80 taxed

SuperCalc5 adds significant enhancements to the SuperCalc series of integrated spreadsheets. It will run on all micros currently on the market. A major new feature is the multi-sheets with hotlinks which not only links independent multiple spreadsheets, but also links multiple pages of a single spreadsheet.

Other features include an auditing and debugging function; presentation quality charting and graphics capabilities; presentation quality reporting and accessibility to Silverado, the add-in database management system for spreadsheets and Lotus 1-2-3 co-existence.

New Machines

PX-16 △

Epson Australia
Phone: (02) 452 5222
Price: See below

The PX-16 is a portable computer that is PC compatible and designed for commercial, industrial and scientific applications. The PX-16 offers a choice of keyboards, screen units, cartridge interfaces, expansion interfaces and disk drives.

It is based on the V20 CPU (8088 compatible), comes with standard 256 kilobytes main RAM, which is expandable to 1.4 megabytes. It has switch selectable dual clock speeds of 4.77 MHz and 10 MHz. The 512 Kbyte system ROM includes MS-DOS Version 3.2, GW-Basic and utilities. It also provides three 512 Kbyte MASK ROMs and three 128 Kbyte EPROMs as application ROMs.

A basic unit with 256 Kbyte of RAM costs $1065 untaxed; contact Epson for pricing of other configurations.

FONT MAKER creates bit mapped fonts from outline fonts, in any size, width, angle, mirror, even reversed.

While Bitmap fonts are only available in limited sizes, all of the typefaces in the Digi-Font range are scalable, meaning that they can be used in a very wide range of sizes, from 3·0 point up to 720 point, in tenth of a point increments. (limits depend upon computer and printer limitations.) And since you can create fonts with partial character sets, you can create a special headline font in an enormous size without the normal memory limitations.

Unlike Bitmap fonts, Digi-Fonts may be manipulated in a variety of ways to create special fonts. With Font Maker you can create fonts which are wider, narrower, slanted, rotated, mirrored, and/or reversed, in both portrait and landscape orientations.

Font Maker with 8 fonts is only $120.
The complete Digi-Font Typeface Library with 258 fonts is $700. (Thats less than $3 per font!)

If you would like further information and sample sheets, simply attach your business card to a copy of this advertisement and send it to Software Express.

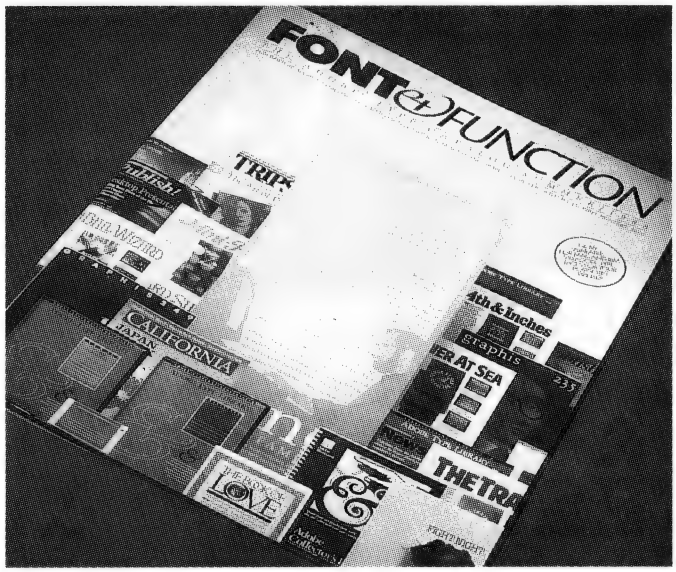
SOFTWARE Express

YOUR COMPUTER

AUSTRALIAN DISTRIBUTOR OF DIGI-FONTS & FONT MAKER

SYDNEY: 74 PARRAMATTA RD, STANMORE. 2048. PHONE (02) 519 3249. FAX (02) 516 3671
MELBOURNE: 48 A'BECKETT ST, MELBOURNE. 3000. PHONE (03) 663 6580. FAX (03) 663 6117

Peripherals and Extensions



Font & Function △

InfoMagic
Phone: (02) 975 1044
Price: $10.00

The Adobe Type Library, a collection of downloadable fonts, can be seen in *Font & Function*, the newly expanded Adobe type catalog. The tabloid format of this 4-colour, 32-page catalog, contains typographic information in addition to the standard character sets and text samples.

Included in the catalog are historical origins of the typefaces, technical information about how downloadable fonts work, expert 'how-to' advice on specific applications and interviews with world renowned type designers. The catalog itself was, of course, produced using the Adobe type library.

EL 286 Netware System

New Dimension Computers
Phone: (03) 544 4233
Price: See below

The EL 286 Netware System enables the transformation of any single user, 100 per cent IBM compatible 80286 or 80386 into a true multi-user system, supporting up to three WS 286 workstations, plus the original AT workstation.

The operating system is Novell Advanced Netware 286 with MS-DOS 3.X, with file and record locking and electronic mail. Each workstation has its own 80286 processor, 640 kilobytes of memory, graphics (including EGA), colour and monochrome and I/O port.

The EL 286Netware System features Novell Advanced Netware 286 operating system, priced at $1150, and the North Star workstation board, cable and keyboard with RS232 port, priced at $3200.

I/O card

Electronic Solutions
Phone: (02) 427 4422
Price: $399 taxed

A new I/O board for IBM PCs and compatibles has been released by Electronic Solutions. The board features a parallel printer port, 4 serial communications ports, a games adapter port and a 1.2 megabyte/360 kilobyte floppy disk controller. The floppy controller can drive either two 1.2 Mbyte drives, two 360 Kbyte drives or one of each density. The serial ports can be configured to be any combinations of COM1: to COM8:.

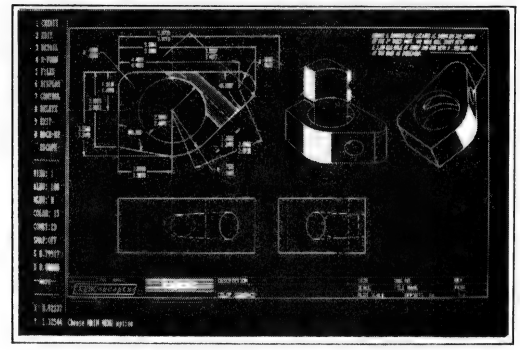
ES Mouse

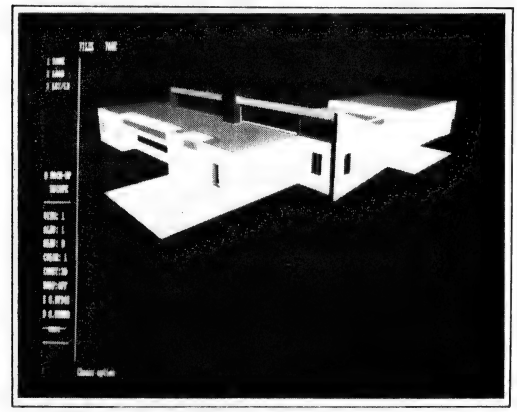
Electronic Solutions
Phone: (02) 427 4422
Price: $99 taxed

The ES Mouse is a serial type and interfaces with all popular packages. It automatically selects between Microsoft and

CADKEY 3

THE LARGEST SELLING 3D CAD SYSTEM IN THE WORLD





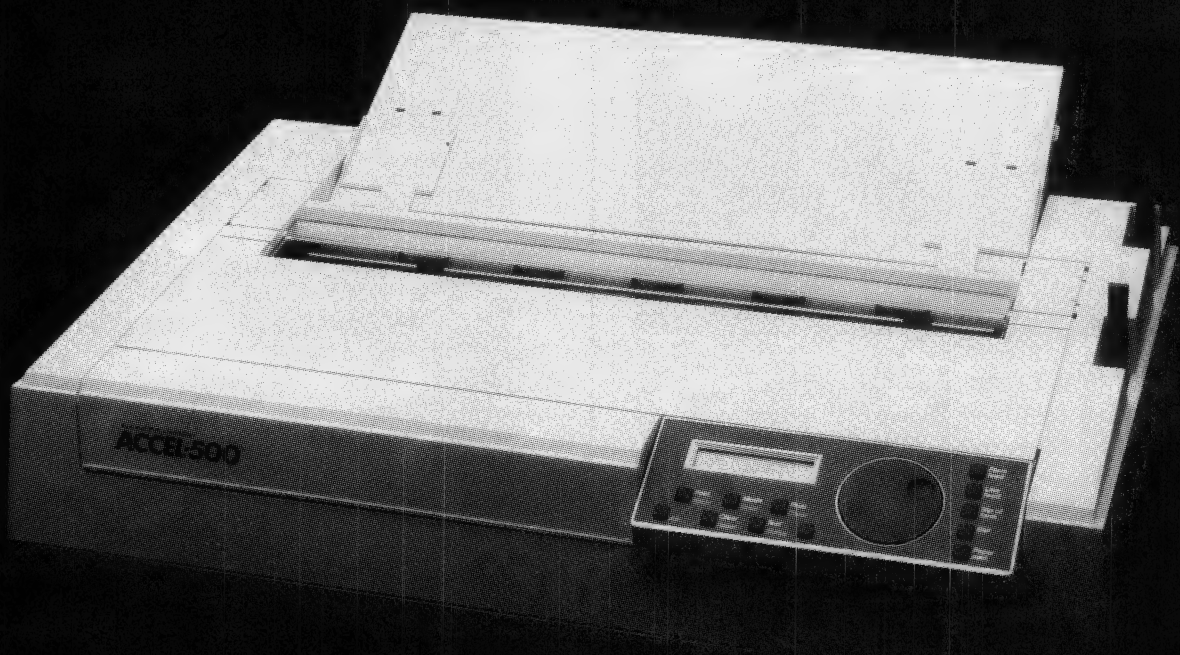
VOTED No 1 CAD IN U.S.

Cadkey 3's precise, three dimensional database, open architecture and easy to use interface are why 40,000 systems are currently in place worldwide. Providing over 175 links to manufacturing systems, such as those for tooling, stress analysis, numerical control and more as well as CADKEY'S Advanced Design Language (CADL), a unique and highly customisable programming language.
Cadkey, now bundled with the fast, easy to use shading and animation software, SOLID SYNTHESIS CADL and 3D IGES translator, is an amazingly economical solution.
Cadkey 3 was voted number 1 3D PC-Cad product in the U.S. because it has "More features, more options, more capabilities, more value for your dollar and is easier to use" than any other PC Cad product on the market.
Ring us now for your nearest dealer.

Minicomp
104-108 Mount Street, North Sydney
Telephone: (02) 957 6800

Cadkey is a registered trademark of Cadkey Inc.

Top Dot.



It takes speed, print quality, and value to reach the pinnacle in 24-pin dot-matrix printing.

The new Accel-500 boasts a draft mode speed of 480 cps. Combined letter quality with high resolution color graphics.

Enough to make Accel-500 the Top Dot. But the specs go on:

Accel-500 compatibility isn't limited to the most popular software and networks. Optional emulations make it Top Dot for DEC, Tektronix, Convergent, and HP-GL users as well.

The Top Dot around the office must be quiet, easy to use, and inherently reliable. Accel-500 hums at an office-quiet 55 dBA. It loads every conceivable form from almost any position. (An optional sheetfeeder is also available.) And runs unattended, around the clock.

The Top Dot is state-of-the-art. Accel-500's unique select-Dial ** puts paper movement and control up front, under your thumb. And plug-in Inteli-Cards add fonts or emulations instantly.

The Top Dot even includes a choice of colors. Executive Black or traditional Ivory.

Naturally Top Dot gets Top support with 1 Year warranty backed by their Australian Distributor Kenelec.

ACCEL-500™

There's only one Top Dot.

For a free demonstration call

KENELEC
(Incorporated in Victoria)

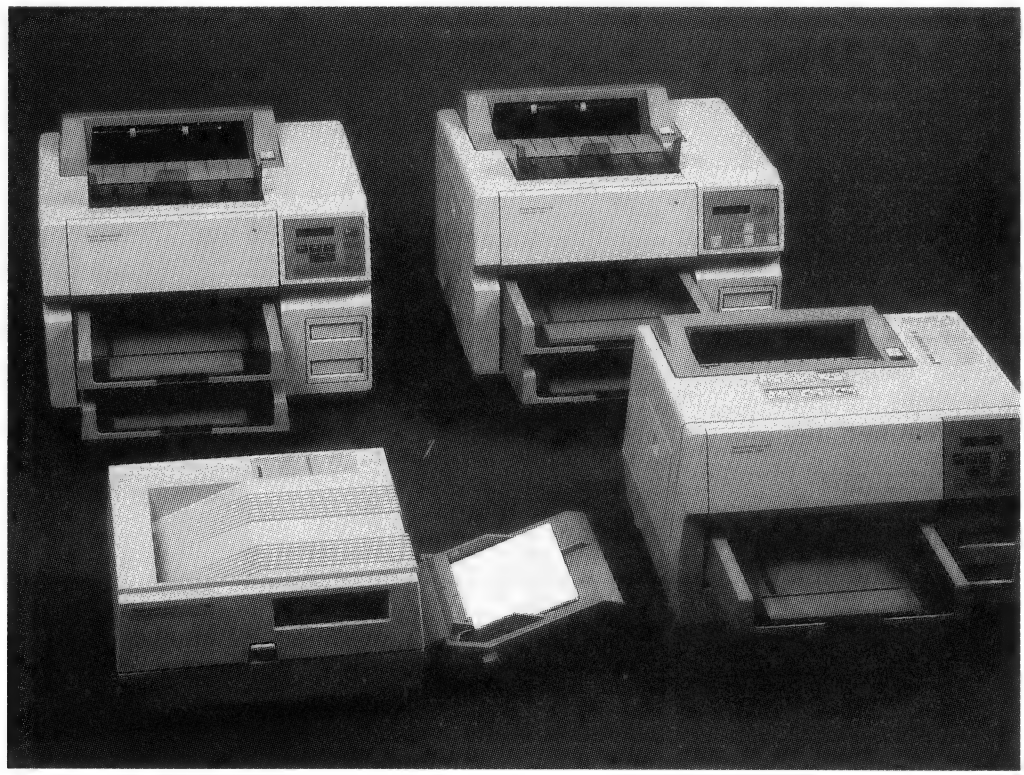
48 HENDERSON RD, CLAYTON, VICTORIA 3168.
PH (03) 560 1011, TLX AA 35703, FAX (03) 560 1804.

• NSW (02) 439 5500 • SA (08) 223 2055 • QLD (07) 393 0311 • WA (09) 322 4542

Mouse Systems modes and comes with software to test, set up and operate.

The ES Mouse has a tracking speed of up to 600 mm a second. It also features a resolution of 290 dots per inch (dpi) and up; a selectable baud rate of 1200, 2400, 4800 and 9600. The mouse also has accurate optical rotary structure and an anti-static silicon rubber coated ball.

The ES Mouse is compatible with application software supporting Microsoft and Mouse Systems mice such as AutoCad, ClickArt, Desqview, GEM and Norton Utilities.



Apple Scanner

Apple
Phone: (02) 452 8000
Price: To be determined

Apple released a number of new products at its MacWorld Expo in Boston, USA. Among them was the Apple Scanner. The Scanner provides Macintosh users with an 8.5 *x* 14 inches flat bed scanning device capable of importing text, line art or photographs at up to 300 dots per inch (dpi) into any application supporting PICT, Tag Image File Format (TIFF) or MacPaint file formats.

Using an SCSI interface for high speed data transfer, the Apple Scanner is capable of scanning line art, halftones and grey scales at 300 dpi. Grey scale may be captured at 4-bit/16 levels per scanned pixel.

Other new products released at MacWorld include AppleScan and HyperScan, which are two new software products, a 4 Mbyte Macintosh II, a 4 Mbyte upgrade kit for existing Macintosh II users and RAM expansion kits.

NEC Pinwriter

NEC
Phone: (02) 438 3544
Price: See below

NEC has released two new dot matrix printers, the Pinwriter P5200 and P5300. They are designed for use in a wide variety of applications including desktop publishing and 8-colour graphics. The P5200 and P5300 replace the NEC P5, P6 and P7.

New features include builtin push tractor and envelope feed and a tear-off bar. Print speeds are 95 characters per second (cps) in letter quality or 265 cps in draft quality. The printers have either fabric or multi-strike film ribbon and an 80 kilobyte buffer.

The printers are priced at $995 (untaxed) for the 10-inch width P5200 and $1490 (untaxed) for the 15-inch tractor width P5300.

OmniLaser 2106 △

Texas Instruments
Phone: (02) 887 1122
Price: Under $8000

Texas Instruments' latest release is a desktop laser printer which incorporates PostScript, 35 resident typefaces and the ability to print both envelopes and overhead transparencies.

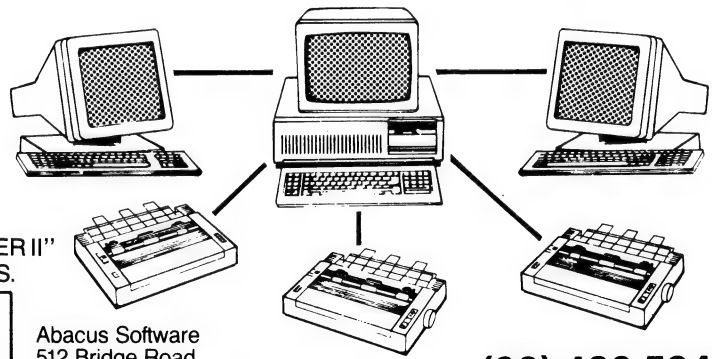
The system shares many of the same features as the other OmniLaser printers, but also has new capabilities such as expanded paper handling feature (including a manual paper feed

"TRADER II" the easy-to-use POINT-OF-SALE SYSTEM

Single or Multi-user
- Point of Sale
- Accounts Receivable
- Stock Control
- Sales Reporting

Options:
- Accounts Payable
- General Ledger

Multi-user DOS is built in with "TRADER II" and runs under MS-DOS/PC-DOS.



$1650 (Incl. S/Tax) 3 users 3 printers

$1450 (Incl. S/Tax) 2 users 2 printers

$995 (Incl. S/Tax) Single user

abacus

Abacus Software
512 Bridge Road,
Richmond, Vic. 3121 (Dealer enquiries invited) **(03) 429 5844**

with the ability to accept envelopes and transparencies), multiple interfaces (including those for Apple Macintosh and IBM as well as compatible PCs). The 2106 also has a font cartridge slot; additional PostScript typefaces are available. Custom 'build your own' font cartridges are also available.

Pictured are the OmniLaser 2106 at front left and the rest of the OmniLaser range.

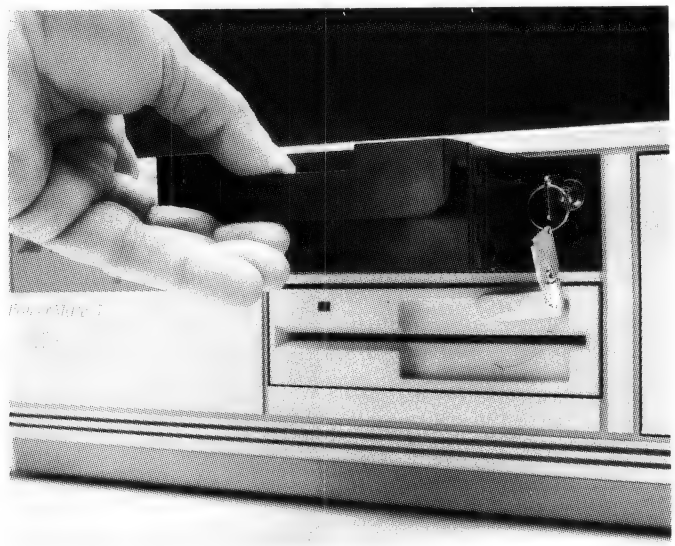
ProStar Transpac hard disk ▷

Australian Executive Services
Phone: (08) 212 5799
Price: See below

The ProStar TransPac is a 3½ inch Winchester drive that plugs into an adapter cartridge that fits into a spare 5¼ inch half height floppy drive slot. For users without spare internal space, a self contained external unit is available.

The hard disk can be inserted and removed from the computer a quickly as a floppy disk, yet it comes in capacities ranging from 20 megabytes to 100 Mbyte.

Unauthorised removal is prevented by an integral lock. The shock-proof TransPac units are available for, and totally compatible with, the IBM XT and AT and clones, and for the Apple Macintosh. Price is $1395 taxed for the 20 Mbyte version and $4561 for the 100 Mbyte version; the shockproof carry case is $92.



SOURCEWARE

Qemm 50/60

Sourceware
Phone: (02) 427 7999
Price: $129

A new expanded memory manager for the IBM PS/2 Models 50 and 60, which converts extended memory on these machines into expanded memory, has been released by Sourceware.

Qemm 50/60, when used in conjunction with Quarterdeck's Desqview software, is able to multitask DOS programs in IBM's PS/2 80286 memory expansion option. It converts extended memory into expanded memory, avoiding the need for IBM PC users to buy expanded memory boards.

SmartStop

Almos Systems
Phone: (09) 245 1164
Price: Not supplied

Almos Systems has released a low cost device which permits the safe shut down of unattended computers and peripherals. Called SmartStop, it is designed to end the need for someone to stay behind to backup the computer.

SmartStop can be used with any kind of PC or minicomputer and allows unattended backup or printing of lengthy documents after hours. It operates by continuously monitoring computer operation and shutting down the system only when the operation has been completed and the disk access LED has stopped flashing.

SmartStop also offers protection with a builtin power filter to protect against power surges and electrical interference. It is claimed that the device can be installed in a matter of minutes.

NetComm

I-Server

NetComm
Phone: (02) 888 5533
Price: $1253

The I-Server offers the ability to expand the number of interconnected users and peripherals to over 2 million on AppleTalk networks. Plugged in as a node on each participating network, I-Server operates completely transparently.

After a brief setup using the I-Server Manager program, users of the newly expanded system have fast, easy access to total system resources. Using I-Server as a LAN network bridge, the AppleTalk network coverage of 1000 feet can be doubled. In addition, I-Server offers more network throughput.

WEBSTER COMPUTER CORPORATION

Multigate

Webster Computer Corporation
Phone: (03) 764 1100
Price: Not supplied

Multigate can be used a gateway between an Ethernet connected host computer running TCP/IP and up to four AppleTalk networks. Alternatively, Multigate can connect up to four AppleTalk networks without the necessity for connection to Ethernet.

By using Multigate and selected Public Domain or commercial software, Apple Mac micro computers can be connected to various mini and mainframe computers. Multigate consists of a motherboard with a connection to the Ethernet, a daughterboard with connections to the AppleTalk networks and a power supply. These are all mounted into a compact desktop cabinet.

Icon 1000 and 1500

Sanyo
Phone: (02) 929 4644
Price: See below

The Icon 1000 and 1500 are two new models in the Icon range designed to optimise the benefits of the Novell network through the use of a builtin Shared Memory Interconnect Local Environment (SMILE) card. SMILE allows up to six separate Novell networks to pass their disk management functions to the Icon. The card avoids the protocol bottleneck often found in other workstation environments through a 64 Kbyte dual ported memory on a card installed on a PC or AT.

Features of the new Icon models include a 32 Mbit per second data transfer rate, up to 300 per cent increase in file server throughput, multitasking capability and shared memory interface to other file servers. The 1000 is priced at $1640, 1500 at $26,500

NEX22

Scitec
Phone: (02) 428 9555
Price: $3852.50 taxed

Scitec has released the NEX22, designed to reduce costs and increase the flexibility of customer multiplexing when utilising Telecom's Netplex service. The NEX22 has a modular architecture, which permits the exact matching of X.22 services to the customer's existing equipment and networking needs. It supports X.21 and X.21bis (V.24) ports for connection to the DDN via 48 Kbit/s trunk modules.

Selection of the desired X.54 configuration and X.50 time slots used is by front panel mounted rotary switches for ease of configuration and confirmation. All user indicators and controls, including diagnostics, are serviced from the front.

PC-SIG AUTHORIZED DEALER

Pay-If-You-Like Software

Why pay hundreds of dollars for software? The alternative will now save you even more money and time.

NEW TOLL FREE ORDER HOTLINE 008 777 601 In Brisbane 374 1099

Many IBM and compatible users are now aware of SHAREWARE. That's the approach to marketing software which bypasses the high publishing and distribution costs to give you software at the lowest possible price. For a nominal fee you can obtain high quality software and if you like that software you are encouraged to register with the author. This registration usually costs between $20 and $150. In the past most registrations have needed to be sent to the USA – that meant obtaining a bank draft, waiting and wondering what you'll get and then often you would need to spend a couple of hours at customs paying duty and sales tax.

Now things have changed! We can now offer registration for many SHAREWARE products and save you the trouble of dealing with overseas authors. The registration fee of course varies from product to product but in every case you'll save both time and money. Products marked with a ☆ on this page can be registered with us – many of them exclusively with us.

You need not be a member to purchase our disks. Members receive our 400+ page Directory, bimonthly magazines and discounts on disks. Right now members (and that includes new members who use the coupon on this page) can purchase a selection of ten disks from the library for just $59.50 including tax (+$5 p&h). ($NZ99.50+$5). That is just

$5.95
per disk
$9.95 per disk in NZ

If you decide that you don't like the software you may still keep it. You only pay the author's registration fee if you like the software and decide to use it. Manuals are included on the diskette or you can purchase our new publication "Up and Running in 15 Minutes" which covers the products marked ↗ on this page.

The following is a small selection from the library:

❑ **#5, #730 & #1015 PC-FILE+ (3 disk set)** ↗ ☆
Jim Button's very popular database system. Works with other Buttonware software eg PC-TYPE, PC-CALC+.

❑ **#78 & #627 PC-WRITE (2 disk set)** ↗ ☆
The famous Shareware word processor from Quicksoft. Everything you need in a word processor including spell check.

❑ **#90 & #594 GENEALOGY ON DISPLAY (2 disk set)**
Written in BASIC with concern for the novice Genealogist. As well as the expected features eg printing family trees, family group sheets, and descendents charts the program creates parentchild indexes and prints ID numbers.

❑ **#105 PC PROFESSOR**
A very popular tutorial on the BASIC programming language which increases in complexity as the user progress.

❑ **#199,#1016 & #1017 PC-CALC+ (3 disk set)** ↗ ☆
A new version of the popular and easy to use spreadsheet program from Buttonware.

❑ **#287 & #288 FILE EXPRESS (2 disk set)** ☆
Expressware's great new easy to use and much more powerful data base system. Very easy to get started as it comes complete with an on disk tutorial.

❑ **#320 TOUCHTYPE**
A colorful way to improve your typing. Suits either PC or newer enhanced keyboards.

❑ **#344, #345, #1032 & #1124 PC KEY-DRAW (4 disk set)** ☆
Combines CAD, paint, slide show and desk top publishing into one package. Fast and easy to use with or without a mouse.

❑ **#403 PC-TUTOR**
Ideal for new users to gain an understanding of your PC and how to use it. Checks on your progress with question answer format.

❑ **#404 EZ-FORMS** ☆
Create your own master forms exactly as you want them. Great for small businesses.

❑ **#455,#681 & #682 PC-TYPE (3 disk set)** ☆
Jim Button's WP with on line help, spelling checker, whoops key, and mailmerge which works with PC-FILE, Wordstar and ASCII files.

❑ **#480 PC OUTLINE** ↗ ☆
One of the very best Shareware products. Can outline and organize documents point by point. Ideal for essays and the like. From Brown Bag Software.

❑ **#499 PROCOMM** ↗ ☆
Datastorm Technology's state of the art telecommunications software.

❑ **#505 PC STYLE** ☆
Analyses text files for readability – considers the number of words per sentence, % of words of specific length, personal words, action words. Make your writing read better.

❑ **#523 SIDEWRITER**
Turn your spreadsheet on its side and print it on your Epson or compatible printer down instead of across the page.

❑ **#524 & #525 EXPRESS CALC (2 disk set)** ☆
One of the better Lotus 123 clones handling worksheets up to 64 columns by 256 rows. Complete with tutorial and documentation.

❑ **#528 NEW YORK WORD** ☆
A sophisticated WP originally written for larger machines. Includes hyphenation and de-hyphenation.

❑ **#608 AUTOMENU** ↗
Magee Enterprises menu management program that has become one of the fastest selling Shareware programs.

❑ **#641 MAHJONG (Australian author)**
A fascinating game with extraordinary graphics on colour or Hercules mono. Excellent documentation for beginners with play levels from beginner to excellent.

❑ **#646 AMY'S FIRST PRIMER**
Six games to teach basic reading skills to a pre-reading child. Positive reinforcement helps the learning can be fun approach.

❑ **#669 & #670 GRAPHTIME II (2 disk set, Australian author)** ☆
Business presentation graphics with line column and pie charts. Works with dBase Mutiplan and Lotus. Hercules version on #833 & #834.

❑ **#687 & #688 ACS IN-CONTROL (2 disk set, Aust. Version)** ☆
Comprehensive contact filing system with on-line documentation, high speed search, electronic card file and tickler file. Can graphically display appointments for next two weeks.

❑ **#696 QUBE-CALC** ☆
Three dimensional spread sheet with on line help and powerful macros.

❑ **#705 CHILDRENS GAMES**
A straight forward approach to making fun educational with good graphics. Geared for 2 to 10 year olds.

❑ **#726 GOALSEEKER** ☆
Finds answers fast by working backwards in Lotus, VP Planner, Supercalc 3/4 or Multiplan.

❑ **#727 POWERMENU** ↗ ☆
Brown Bag Software's menu system with 10,000 selections. All your applications can be a keystroke away!

❑ **#728, #729 & #1112 HOMEBASE (3 disk set)** ☆
A new version of Brown Bag's memory resident desktop organiser. PC Magazine said, "It delivers the most bang for the buck among desktop organisers."

❑ **#765 GALAXY** ↗ ☆
A new leader in Word Processors with enough versatility and strength to be valuable to both the beginner and professional user.

❑ **#780 BRIDGEPAL**
A great way to practice your bridge with up to three partners.

❑ **#800 BAKER'S DOZEN** ☆
A collection of more than 13 utilities from Buttonware.

❑ **#812 & #813 SOAR (2 disk set)**
Service Oriented Accounts Receivable for businesses that provide services as well as products. Menu driven and easy to operate.

❑ **#816 & #817 TURBO C TUTORIAL (2 disk set)**
Programmers who know other languages will be very familiar with Turbo C when they complete the lesson.

❑ **#819 CROSSWORD CREATOR**
Ideal as a learning tool but can be used by anyone who enjoys designing or solving crossword puzzles.

❑ **#828 EDRAW** ☆
Sophisticated graphics able to draw schematics, block diagrams, flowcharts and can even be used to lay out a printed circuit board.

❑ **#830 WAMPUM**
A full featured menu driven implementation of dBase III. Can be used for application development and an enduser database management system.

❑ **#836 DISK COMMANDO**
Seventeen utilities for your floppy or hard disk drives. Shareware's answer to Norton Utilities.

❑ **#844 FUN KEYS, EDUCATIONAL FOR CHILDREN**
Teaches the alphabet to 2 to 5 year olds by showing pictures for each letter and playing nursery rhyme melodies.

❑ **#855 FASTBUCKS** ☆
A menu driven home bugetting system.

❑ **#870 HGCIBM – COLOUR EMULATION FOR HERCULES**
Enables software written for colour cards to run on the Hercules mono card.

❑ **#878 TEACHERS DATABASE FOR THE CLASSROOM**
Not just a database but test scores may be weighted, averaged, statistically analysed, changed to a percentage or changed to a letter grading. Saves significant amounts of teacher's time.

❑ **#879 BIORYTHM MONTHLY SCHEDULE PROGRAM**
Not only can you produce a Biorythm but compare those of two people for compatibility.

❑ **#893 PRIVATE LINE AND WEAK LINK**
Private Line is an encryption\decryption program. Weaklink connects two PC's via their serial ports and allows file transfers. For example file transfers can be made from the 5.25" drive on one machine to a 3.5" drive on another.

❑ **#909 & #910 dTIME KEEPER (2 disk set)**
Can record time by the minute for a number of employees. Provides current accounts receivable totals and enables automatic billing of standard charges. Menu driven.

❑ **#918 CAMBRIDGE THOROUGHBRED HANDICAPPER**
Attempts to predict future performances by analyzing the past performances. Also gives a betting strategy.

❑ **#923 PROFESSIONAL REAL ESTATE ANALYST**
A set of Lotus macros to analyse the return on a property using up to 14 different measures.

❑ **#1007 C WINDOW TOOLKIT**
Designed for the novice and intermediate C programmers who want full screen, colour, cursor control and windowing capabilities without complex escape sequences or DOS level interrupts. Even more features for the experienced programmers.

❑ **#1058 EXPRESS GRAPH** ☆
Easy to use business graphics – Input your own data or load from a spread sheet.

❑ **#1110 MINDREADER** ☆
A curious mix of W.P., spell checker, address book – great for the slow typist as it predicts what you may type next.

❑ **#1119 FLU-SHOT +**
We check carefully for a virus before we include a disk in our library but FLUSHOT will enable you to write protect your hard disk just in case.

Yes, I would like to try the following PC-SIG software:

_____ _____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____ _____

TOTAL	5.25"	@ $13	_____ $NZ15
ANNUAL MEMBERSHIP		@ $38	_____ $NZ50
NEW MEMBERS X-TRA SPECIAL Membership + 10 Disks	5.25"	@ $97.50	_____ $NZ149.50
"UP AND RUNNING IN 15 MINUTES"		@ $28	_____ $NZ35
Add $2 ($NZ 3) for each 3.5" disk.			_____
		POSTAGE AND HANDLING	$5.00
		TOTAL	_____

Payment by: ☐ Cheque ☐ COD (Aus only)
☐ Visa ☐ Bankcard ☐ Mastercard

Card No: _____

Expiry: _____ Signed _____

Name _____

Address _____

_____ State _____ Code _____

MANACCOM PTY LTD

Mail: Freepost No 29 (No stamp required)
PO Box 509
Kenmore Qld 4069

Call on 07 374 1311
Fax on 07 374 2274
Viatel #49000*
Orders 008 777 601

shareware

Represented in NZ by:
Software Plus
172-6 Ponsonby Rd
Auckland
09 76 2667

All prices include applicable sales tax or GST.

© PC-SIG, Manaccom 1988

AT LAN adapter card

Micro Networks
Phone: (02) 969 6922
Price: $1275 taxed

Micro Networks has released a new high speed 16-bit AT LAN adapter card for IBM PC ATs and compatibles. In benchmark tests using the Novell PERFORM 2 test utility, the new G/Ethernet 16-bit AT adapter showed file server data transfer rates of 1066 kilobytes per second. G/Ethernet adheres to the IEEE 802.3 Ethernet standard specification. The 16-bit adapter features 64 Kbyte of on-board RAM with heavy loads.

Metro switch

Elmeasco
Phone: (02) 735 2888
Price: See below

Elmeasco has released two new models to its Metro switch line of automatic printer sharing systems. The two new models are master units providing four parallel input ports and either a 256 kilobyte (Model 434) or a 512 Kbyte (Model 435) buffer.

Each of the four computers attached to the Metro Switch unit can access one of two printers, as required. The Metro switches are fully intelligent print managers that completely remove the need for manual switching normally required to direct a specific computer to a shared printer in a non LAN environment. On-board electronics controls all port selection and allows the Metro-Switch to dynamically allocate print routing. The Model 434 is priced at $935 untaxed, while the 435 is priced at $1105 untaxed.

SP811 Programmer

Samways Electronic
Phone: (048) 85 1541
Price: Not supplied

The SP811 provides a cost effective solution to the problem of accessing and configuring memory buried within 68HC811 type MPUs. The EEPROM can be erased, programmed, verified and read. Mask PROM variants with bootstrap mode can be read and verified.

Three separate sockets are provided to suit the various packages available. A ZIF socket accommodates 40- and 48-pin DIL versions. Separate 44- and 52-pin LDCC sockets house the leaded chip carrier types. An LDCC chip extraction tool is also included. The SP811 is supplied complete with simple to use, menu-driven software and interface cable to suit IBM PC, XT and AT style computers. Power is supplied by either an internal battery or an optional external battery.

ProPoint

Mitsui
Phone: (02) 451 7711
Price: $395 taxed

The ProPoint optical tracking device is an upside down mouse which allows fingertip cursor control via the use of a protruding track ball. It incorporates the Apple Desktop Bus (ADB) and has two external ports. These are located on either side of the device for convenient attachment to the left or right side of the system keyboard. The dual ports provide daisy chain connection for a third input device, like a graphics tablet or digitizer.

Through custom firmware, the user is able to use ProPoint to move the cursor across the screen at an accelerated rate. Its unique interface recognises each input device on the ADB and allows independent cursor control.

IMPRINT COMPUTER PUBLISHING SYSTEMS

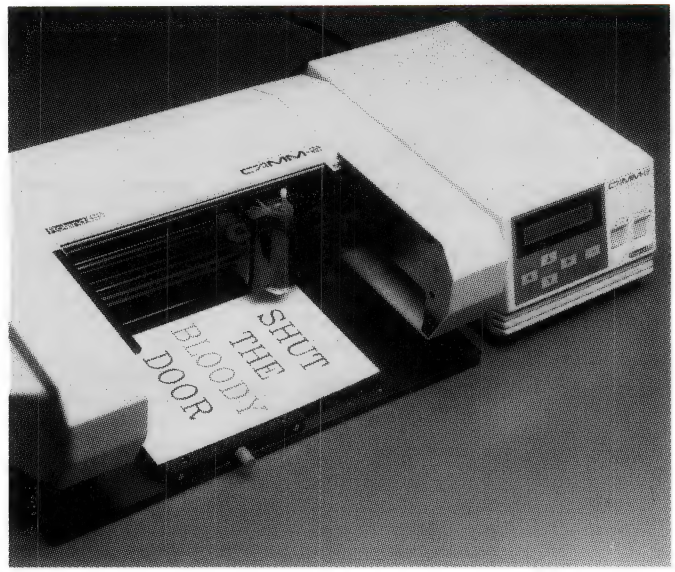
Laser Printer Adapter

Imprint
Phone: (02) 818 3577
Price: See below

The Laser Printer Adapter (LPA) is a PC adapter card which is both a controller for laser printers and a PC printer port. The LPA contains no ROM firmware and uploads EiconJet, Eicon's PCL interpreter, and EiconScript, Eicon's proprietary PostScript language interpreter, from the PC's fixed disk. The open architecture allows users to switch between EiconJet and EiconScript in a matter of seconds.

It can drive engines of different resolution, such as Canon's 400 dots per inch SX engine and run different PDL interpreters.

The recommended retail price for the 1 Mbyte configuration of the LPA is $2265; an additional 1Mbyte of RAM, EiconScript and 13 font outlines costs $2633.



CAMM-2

Roland
Phone: (03) 241 1254
Price: $7756

The CAMM-2 is a spin-off from Roland's plotter technology and is an engraving system. Through the inbuilt command sets the unit can become an extension of an existing Cad system, or programmed directly from the PC.

The CAMM-2 can be used to engrave light metal plates such as brass and aluminium, as well as standard single and multi-layer plastics. The unit has a wide range of applications in both commerce and industry apart from the obvious sign making, name tag and identification panel areas. It could be used for such functions as precise hole placement in pre-production printed circuit boards. The spindle revolves at 11,000 rpm and the unit has a maximum engraving speed of 1.8 metres with a working area of 200 mm on the X axis and 140 mm on the Y axis.

FreezeFrame

Polaroid
Phone: (02) 887 2333
Price: $3000 untaxed

The PAL standard version of Polaroid's FreezeFrame low-cost video still image recorder has arrived in Australia. FreezeFrame captures and digitizes an image

field from PAL colour or RGB video signals, at the touch of a single button. The device then delivers a choice of quality self-developing photographic print, or 35 mm slide, each in colour or black and white, of the frozen image.

The arrival of the PAL version means high quality still images from video are now available easily to anyone with a PAL video source or RGB graphics computer. The recorder is expected to interest markets such as broadcast and industrial video production, medical diagnostics, security and law enforcement, advertising and education.

Nikko MC 501

Nikko Business Equipment
Phone: (02) 949 4244
Price: Not supplied

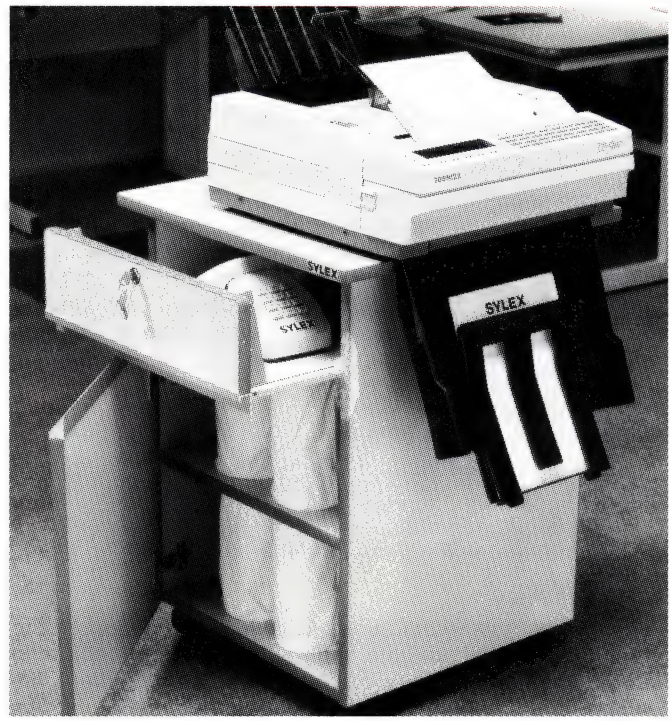
The MC 501 is an uninterruptible power supply system for PCs and peripherals. It protects microcomputers from power fluctuations or interruptions. When a power failure occurs, the MC 501 will keep a standard PC running 7 to 25 minutes, to allow an orderly shutdown of the system. It will also maintain the voltage within a safe tolerance for your PC, and eliminate harmful spikes, surges and EMI/RFI electrical interference.

Mobile Fax Cabinet ▷

Sylex
Phone: (02) 647 2888
Price: Not supplied

We now can't do business without the fax; but where do you store it? In a Mobile Fax Cabinet, of course! Sylex has introduced a cabinet which features a lockable telephone drawer to prevent unwanted tampering, and cable ducting for neatness and practicality.

Space is allocated for numerous paper rolls, ensuring that all your fax requirements are located in one area. The cabinet comes in Florentine Grey craftwood with mid grey T-moulding.



The Great...
Database Adventure
Meta 5GL
The Australian Application Generator

Join The Great Data Base Adventure. Originally released in 1984, Meta 5 version 4.0 is now available. More than just a data base, this Australian developed 4/5gl allows you to create your own storage data base, have automatic updating of associated records and generate your own reports with one of 2 report generators.

Dare To Think Differently. The terminology of Meta 5 allows you to think like a person – not a computer. If you can describe your application, you can generate it with Meta 5. The software comes with an application fully developed and a second described for you to develop for yourself. (The solution is provided in a sealed envelope in case you get lost!)

If you want the flexibility to create your own data storage and change it as your business changes, then Meta 5 is for you. Start out simple and expand at your pace.

Over 2000 have been sold in 4 years.

If your programming experience totals "...a bit of Basic 5 years ago..." **then you are an ideal candidate for Meta 5.**

Contact Meta 5 solutions on (03) 873 3773 To Get Started Now!

META 5 SOLUTIONS
NSW – Yaralla Computing (02) 499 2213
QLD – D.P. Shaw & Associates (07) 378 3432
VIC – Meta 5 Solutions (03) 873 3773

JOHN HEPWORTH

YOUR IBM

After the introduction of OS/2, many people assumed that IBM would write-off DOS, ignoring it in favour of its newer sibling. Nothing could be further from the truth – DOS 4.00 is a major upgrade, with important additions.

The two major new features are support for hard disk partitions over 32 megabytes, and the introduction of a mouse-driven visual shell. The user no longer has to grapple and battle with a terse command line and a range of dimly remembered commands. In addition, around thirty commands are either new or enhanced, and there is additional support for EMS 4.0.

Big partitions

The big change for DOS 4.0 is the ability to have hard disk partitions over 32 Mbytes in size. The limit is now somewhere over 1 gigabyte, and some of the IBM references mention 2 Gbytes. This has been achieved by changing the size of the FAT entries from the 12-bits of DOS 2.x and the 16-bits of DOS 3.x to 32-bits.

Compatibility

As I write this, the Technical Reference Manual required by programmers is not yet available, and so details of functions and interrupts which might be new or altered will have to wait for a later column. In the meantime, other IBM notes indicate that functions 25 and 26 (absolute sector read and write) have been changed. Taken along with the new FAT structure, this means that disk repair utilities like Norton Utilities and Mace should not be used. I found no problems with any other software, and no written information so far available has shown any other compatibility problems.

While new versions of Norton and Mace will undoubtedly be available soon, I chose not to alter my disk format from DOS 3.3. When I need disk repair I use a DOS 3.3 boot floppy, and then run Norton without any drama.

The DOS shell

The most striking and visible addition to DOS 4.0 is the DOS shell. It substitutes a menu system for terse commands at the DOS prompt. Naturally, the user can exit to DOS to run things manually as always. The DOS shell is run by the file DOSSHELL.BAT which is, in turn, run by the last line of the AUTOEXEC.BAT file. The image on the screen can be in graphics or character mode: EGA, MCGA and VGA use graphics; MDA, CGA and Hercules use characters. MDA and Hercules have light letters on a dark background, while the colour boards have a pale blue/grey background and dark letters.

At the top of the initial screen are the date and time. Part way down the screen are the names of up to 16 programs and groups. The DOS shell uses a two level menu structure. The initial screen (called the Main Group) can invoke up to 16 other menus ('groups' in IBM terminology), and are named by the user.

Selections may be made with mouse or keyboard, and while the shell is good with keyboard, a mouse really makes it fly! In general, the mouse is moved till a highlight is on the desired item. One click selects the item, and two clicks execute it. Quite familiar to users from other environments likes Windows!

Programs can be run from entries in the Main Group, or from entries in lower groups. When an entry in the Main Group is used to run programs, one less second level group is available. No third level groups are available.

Three Action windows can be popped down from the top of the screen of the Main Group. These are called Program, Group and Exit. The Program window allows the user to Add, Change, Delete or Copy an entry used to run a program. The Group menu allows the user to Add, Change, Delete or Reorder an entry used to select a second level group from the main group.

When adding a Group, the user selects a title to appear in the Main Group. This title can be quite long, and consist of a phrase or more. In addition, the user specifies an eight character name

```
11-09-88                    Start Programs                    11:32 am
Program  Group  Exit                                    3  F1=Help
                              Main Group
          To select an item, use the up and down arrows.
        To start a program or display a new group, press Enter.

Command Prompt
File System
Change Colors
DOS Utilities...
Editors and Word Processors...
Games...
General Utilities...
Languages...
Spreadsheets and Databases...
XTree Professional


F10=Actions              Shift+F9=Command Prompt
```

Figure 1. The initial screen (called the Main Group) can invoke up to 16 other menus, which are called groups in IBM terminology and are named by the user. Selections may be made with mouse or keyboard.

```
11-09-88                        File System                        11:33 am
File  Options  Arrange  Exit                                    | F1=Help
┌──────────────┐┌──────────────────────────────────────────────────────────┐
│A B C D E     ││                                                          │
│Print...      │└──────────────────────────────────────────────────────────┤
│Associate...  │                                                          │
│              │┌──────┬──────────────────────────────────────────────────┤
│Move...       ││More: │                    *.*                    More: │
│Copy...       ││      │ 012345  .678          109   17-06-88            │
│Delete...     ││      │ AUTOEXEC.400          238   11-08-88            │
│Rename...     ││      │ AUTOEXEC.BAK          460   01-09-88            │
│Change attribute...  ││ AUTOEXEC.BAT          472   07-09-88            │
│View          ││      │ COMMAND .COM       37,637   17-06-88            │
│Create directory...  ││ CONFIG  .BAK          297   19-08-88            │
│Select all    ││      │ CONFIG  .SYS          533   30-08-88            │
│Deselect all  ││      │ DV      .BAT          128   21-04-86            │
└──────────────┘│      │ FONT    .COM        2,317   01-11-83            │
 ├─LOTUS        │      │ HARDCOPY.COM        2,724   13-12-84            │
 ├─MOUSE        │      │ IBMBIO  .COM       32,810   17-06-88            │
                └──────┴──────────────────────────────────────────────────┘
F10=Actions  Shift+F9=Command Prompt
```

Figure 2. From the File Action window, files can be Printed, Moved, Copied, Deleted, Renamed, Attributes changed and Viewed.

for a file containing the details of the lower level menu. Optionally, help text for the group and a password can also be specified. The Change option allows any of these items to be changed for an existing group, while Delete completely removes a group and Reorder allows it to be moved to a different place in the list.

When a Program is added to a group, the Program window requires a title which can then be shown in the the menu. Next a string of Program Startup Commands are entered. These contain the sorts of things normally found in a batch file; the F4 key is used to insert a separator between individual commands rather than the Enter key.

File system

One of the options in the Main Group which proves to be of greatest use is the File System. This brings up a completely different screen, which shows a visual 'tree' of the selected drive and a sorted directory of the files.

A new drive is selected by moving the pointer to the drive letter and clicking on it. A new directory is selected by pointing to its name on the visual tree and clicking the mouse, and an individual file is selected by pointing to it and clicking. Executable files (those program files with .BAT, .COM or .EXE extensions) can be run by pointing to them and clicking twice. Alternatives are available from the keyboard, and while not inconvenient, they are not as good as the mouse equivalent.

Other variations are possible. The tree and files for two directories can be displayed, and all files on a drive can be seen, in which case the tree display is replaced by a panel giving full details of the file currently selected.

There are a vast number of actions which can be undertaken in the File System. From the File Action window, files can be Printed, Moved, Copied, Deleted, Renamed, Attributes changed and Viewed. A special option called Associate allows all files with a given extension to be associated with a particular program, so that, as an example, all files with a .DOC extension could be associated with the word processor.

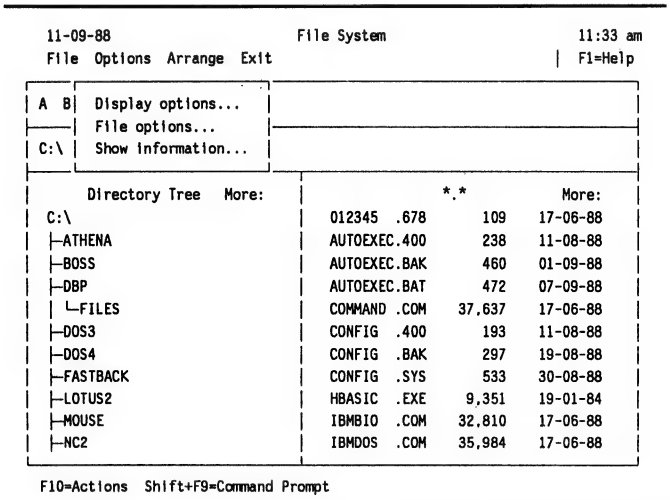


Figure 3. *The pull down menu for File Options.*

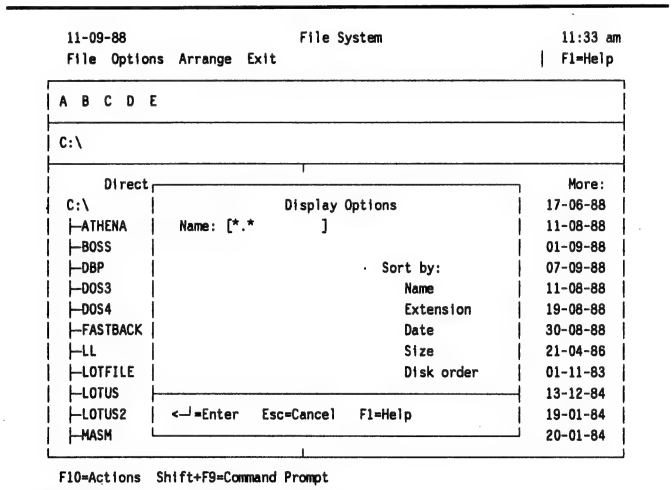


Figure 4. *Entering a display option in File System.*

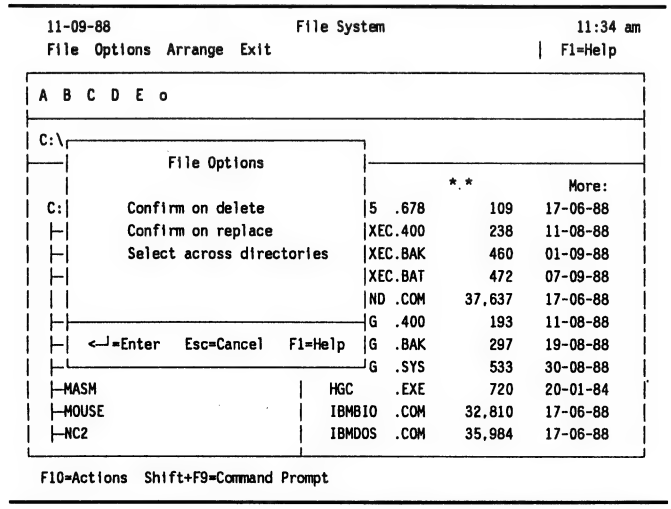


Figure 5. *It is possible to create, delete and rename directories while within the File System, and files can be selected and deselected allowing actions to be done on more than one file at a time.*

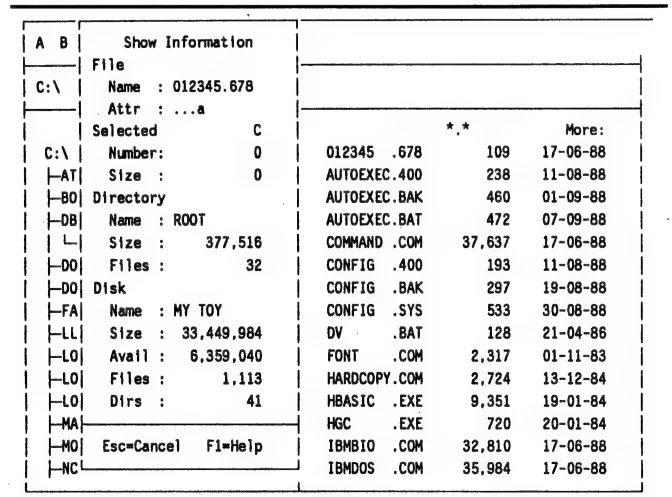
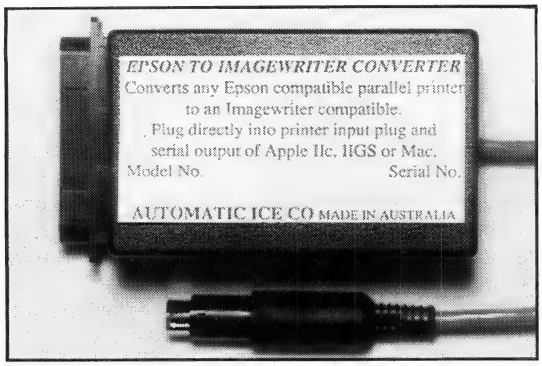


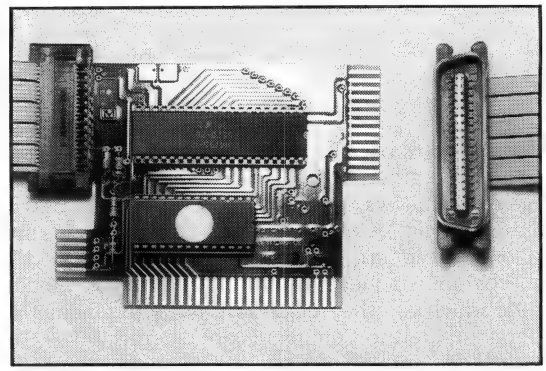
Figure 6. *Showing information on a file.*



MAKE YOUR EPSON/EPSON COMPATIBLE PRINTER INTO AN IMAGEWRITER

Use in place of normal printer cable (saving $30) to convert the serial output from Mackintosh, Apple II, IIe, IIGS or Apple IIc to parallel input for an Epson printer. As well as changing from serial to parallel, it changes the Imagewriter text and graphics codes to print on the Epson. Colour graphics are also supported. To all intents and purposes, the Epson becomes an Imagewriter (only cheaper), can also be used as a straight serial to parallel converter and to convert other printer types to imagewriter. Please specify computer as the serieal plugs are different.

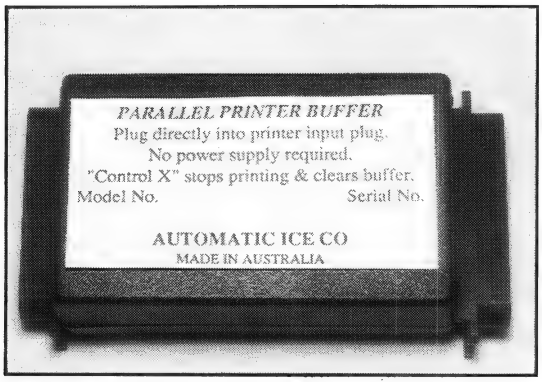
MODEL EIC **$99.00**



NEW AUTO ICE PARALLEL PRINTER CARD — IMAGEWRITER EMULATION

New version of this well established card with a lot of extra features. It can turn an Epson compatible printer into an Imagewriter, especially useful for IIGS programs and other Imagewriter dependant progarms such as Mousepaint. Contains inbuilt graphic dump routines including colour super Hi-Res for the IIGs. A keystroke immediately brings up the following utilities: (a) A menu driven miniwordprocessor. (b) DOS and PRODOS diskcopy function. (c) BASIC progam Renumber and Append functions. (d) A printout of the current textscreen. Conforms to Apple's official Firmware 1.1 specifications for peripheral cards. Contains disk with printer drivers to convert old non standard programs.

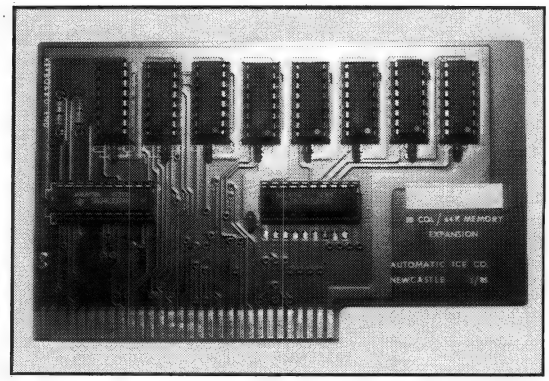
MODEL PR5-N..... **$99.00**



EASILY INSTALLED PARALLEL PRINTER BUFFER

Just insert between the normal printer cable and the printer input plug. Has 32 Kbytes of RAM but inbuilt data compression gives an effective buffer storage of up to 60 Kbytes (approx 35 pages). Transparent to software.

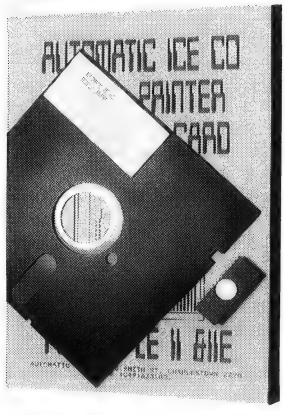
MODEL BF1 ..... **$125.00**



80 COLUMN DISPLAY — 128K MEMORY FOR APPLE IIE.

An old Automatic Ice Co. product. This is functionally equivalent to the original Apple product.

MODEL AM-1 ..... **$99.00**



AUTO ICE PRINTER CARD UPGRADE KIT

Contains EPROM, disk and manual to add the above new features to existing Auto Ice printer cards. Works only with cards marked PR4 or PR5 (please specify).

MODEL PR-K .....

$49.00

The Auto Ice Packet modem is temporarily unavailable due to component shortages.

All these products are designed and manufactured in

Australia by:

AUTOMATIC ICE CO.
10 Smith St.,
Charlestown 2290.

Phone
(049) 63 3188
(049) 63 1386

Bankcard, Mastercard, Visa

As a result, a double click on a data file will run the program with which it is associated. Naturally it is possible to create, delete and rename directories while within the File System, and files can be selected and deselected allowing actions to be done on more than one file at a time.

Installation

Installing DOS 4.0 is simple, but with a couple of twists. It comes on either two 3½ inch disks or five 5¼ inch disks. Merely boot from the DOS distribution disk called INSTALL. An installation program called SELECT automatically runs. If the disk has been partitioned and formatted, as will be the case when upgrading from an earlier version of DOS, just follow the prompts and let SELECT do the hard work for you. As an aside, installing DOS 4.0 on an XT requires the 5¼ inch disks and a 5¼ inch A: drive. The installation program on the 3½ inch DOS disks won't work on an XT, even if a 3½ inch A: drive is fitted!

Now a series of screens and prompts guide the user through the installation process. After a couple of screens of background information, the first choice is made. The SELECT program can configure the system three ways. These are –

a) Minimum DOS function and maximum program workspace;

b) Balanced DOS function and workspace;

c) Maximum DOS function and minimum program workspace.

The differences are the numbers and size of FILES, the number and sizes of BUFFERS, whether or not ANSI.SYS is to be used, and if FASTOPEN.EXE is to be run. The absolute minimum memory used by DOS 4.0 is 61,008 bytes, compared to the DOS 3.3 minimum of 51,552 bytes. The various configurations created by SELECT require from about 76 to 107 Kbytes.

Most users will already have a DOS subdirectory on their hard disks, in which are found programs like FORMAT, DISKCOPY, DEBUG and the other DOS external commands. The SELECT program defaults to copying the DOS 4.0 files into the DOS directory. In doing so the existing files will be overwritten.

When I boot DOS 3.3 from a floppy, as I occasionally need to, I need all the old DOS 3.3 external commands. Most of the programs for the external commands check the DOS version and won't work unless they match. Therefore, I told SELECT to put the DOS 4.0 files in a DOS4 directory, leaving my DOS 3.3 files intact in the DOS directory. This enables me to boot DOS 3.3 from a floppy and have all the DOS 3.3 external commands available.

SELECT also creates AUTOEXEC.400 and CONFIG.400, which contain lines normally found in an AUTOEXEC.BAT or CONFIG.SYS file. They can simply be be renamed AUTOEXEC.BAT and CONFIG.SYS. Often the existing files have a few more essential lines, and in this case they should be amended with a word processor to reflect the contents of the .400 files.

At this point there is one more thing to be done if a non-IBM mouse is being used. One line in DOSSHELL bat actually starts the shell and sets many parameters for it. One of these parameters – /MOS – must be deleted with a word processor, programmer's editor or EDLIN as it would otherwise load a driver for the IBM mouse.

The most striking and visible addition to DOS 4.0 is the DOS shell.

Great stuff

I have a simple test for how useful a program is. A flashy screen, and all the bells and whistles, catch my attention at first, but the real test is to load software onto the machine and see if it is still there four weeks later. On this score DOS 4.0 and the new shell have passed with high distinction. Sure, there are times when I prefer XTree Pro or Norton Commander 2.0 for manipulating the directory and file structure on my hard disk but these times are rare. I made entries in the main group for both of them and so find it easy to pick the one of the three that is best for the job at hand.

The price for DOS 4.0 is $332.22, the upgrade is $175.15 and the Command Reference Manual is $49 – all prices are taxed. Contact IBM on (02) 634 9111.

DOS 4.0 is a great step forward. Over the next few months, as I explore its new features, I hope to share many of them with you. □

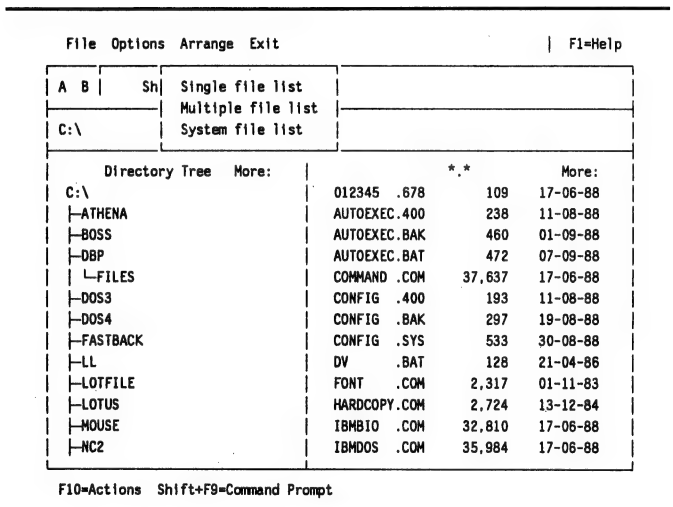


Figure 7. *The Arrange window.*

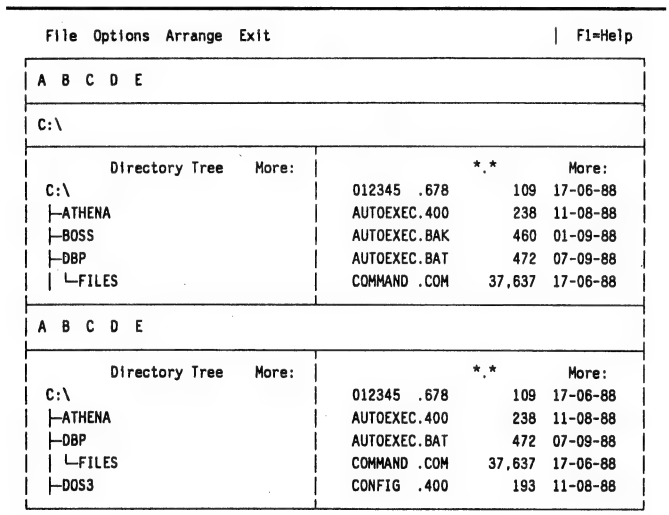


Figure 8. *Multiple windows can be shown in File System.*

STEWART FIST

YOUR MAC

If (heaven forbid!) you spend some of your time mixing with MS-DOS types, you'll hear a lot of talk about 'ARC' files. IBM-typing users are very proud of having the ability to compress their files into ARC format, for ARChiving, using the new lightening-fast programs like PK-Arc and PKX-Arc.

You take a 10 kilobyte file, run it through ARC, and you end up with a 6 Kbyte file which takes up less storage space. If you want to uncompress it later, you de-ARC the file, and get back your original 10 Kbyte.

For some reason, not many Macintosh users seem to know that the Mac has a number of compression/decompression programs, many in the Public Domain. Because they are free (or almost so) many people seem to think that they aren't any good – but they are. You should get one and use it.

The best, for my money, is Stuffit which was written by Raymond Lau. It is freely available on bulletin boards or through user groups.

Stuffit is free to anyone who wants to use it to decompress files, but Lau asks you to send him $US15 if you use it regularly to compress material. If you are registered with him, you get on a list for information and regular updates.

Stuffit compresses text, graphics and sound files, and the main interest with the program to date has been its use with HyperCard stacks – they have a lot of 'air'. If you've been playing around with HyperCard, you'll know by now that it consumes a lot of space in even an average stack. There are a lot of stacks available on bulletin boards, especially in the States, and the cost of downloading them over the telephone lines at 1200 bps gets pretty high. I tried it once from Australia – the key word here is 'once'!

Fortunately, Stuffit compresses HyperCard files well, and so the time taken for the stack transmission can be cut to a quarter if you're lucky, but at least 50 per cent in most cases. Even so, it is still too expensive to try this on the international packet-switching networks unless you're very rich. So achiving is the main reason why you should have a compression program.

Stuffit compresses text, graphics and sound files . . .

Using Stuffit

Stuffit is simplicity itself to use. You fire up the program and it gives you a menu selection which allows you to create or open an 'archive' (in effect a folder, into which you add files).

You then select the files you want to compress – either one at a time or a group together, and in a couple of seconds the files are compressed and stored in the archive. If you've got any more files, you can just add them to the archive at any time.

The program incorporates three types of compression – and usually you will apply all three, although you can choose. Initially the program searches for repeated characters, and encodes these in a compressed form. The process is called 'Run-length Encoding'. I'm not sure that Stuffit follows the normal run-length procedures, but if it does, it will work like this – suppose we have a text line, '=========='; this line of nine equal signs can be stored either as nine distinct characters, or as =8 (only two characters). This second method is a command rather than an 8 preceded by an equal sign.

Normally the eighth bit in any character byte is set to zero. So resetting it on the = to 1 provides a convenient 'flag' to instruct the computer during the decompression process to repeat the character a certain number of times (supplied by the next character).

You can imagine how effective this is with tables which have column tabs created by the insertion of a certain number of spaces form the left-hand side and between columns. Or in graphics where a continuous chain of white or black pixels may stretch a fair distance across the screen.

Run-length Encoding is so significant with high-resolution bit-mapped graphics that this form of encoding is often built-in to commercial desktop publishing programs.

The second compression technique Stuffit uses is known as the Huffman, which in a slightly different form is also important in facsimile transmission. Dr Huffman's compression system relies on the fact that some binary text sequences are used more often than others, which is true for characters in any language.

Samuel Morse (of Morse code fame) analysed English in the 1840s and assigned his shortest signal code (the dit) to the most frequently used character ('e'), two dits to 'i' and so on through the alphabet to longer codes for the least used characters.

Huffman took the same approach with binary digits, and by allocating only a few bits to the most frequently used groups, he was able to create text compressions in the order of 40 per cent. In the process he destroyed the 8-bit standard for a character byte – Huffman treats files as a continuous stream of bits rather than discrete bytes.

The third, and most important form of compression for text, is ZIV-LEMEPL which deals with 'tokens' and repetitious 'strings'. Basically, ZL encoding does for words what Huffman does for characters.

It records frequently re-occurring variable-length strings of characters as 'tokens' (which can be 10-, 14- or 16-bit 'numbers'). These tokens are fixed length bit-string within each program – origi-

File type	Original size	Compressed size	Compression achieved
Original PICT	51.6 Kbyte	31.5 Kbyte	39%
Original TIFF	86.5 Kbyte	25.0 Kbyte	71%
MacPaint	49.4 Kbyte	29.2 Kbyte	41%
MacDraw	22.7 Kbyte	7.0 Kbyte	69%

Table 1. *The results of a number of different file types after compression using Stuffit.*

nally they were 10 bits long (which gives 1024 possibilities), but in Stuffit, Lauhas settled on 14-bit tokens (16,384 possibilities) as the most efficient.

ZIV-LEMEPL systems are virtually indexing the most commonly used character sequences in a file. These are usually short words, prefixes and suffixes like 'and', 'the', 'ing', 'tion' and so on. Once these have been allocated a token, future re-occurances of the sequence are replaced simply by a token pointing back to the previous use of the string. So one 14-bit token might replace a long string of characters, each of which would take 8-bits in uncompressed form.

None of these three systems is mutually exclusive, and none applies exclusively to text – although ZIV-LEMEPL is not at all good on sound files and bit-mapped graphics. With Stuffit you can select which to use, or apply all three if you wish, although this might take some time with large files.

Playing around with Stuffit on a range of files gave me some interesting results – some of which I can't explain. On MacWrite articles (like this one), I consistently got compression reductions of between 30 per cent and 40 per cent – rarely more for straight documents. To clarify this, a 10 Kbyte file would come down to 6 or 7 Kbytes.

However, a couple of film scripts which involve a lot of centering, indenting and white space came down by various amounts between 37 per cent for run-length and Huffman only, to 59 per cent with all three types of encoding.

Database files

On database files the compression is consistently much higher than with word processing, but also much more variable. There's a lot of air-space in databases, and you can often expect compressed files to be only a quarter (or less) the size of the original, but this will depend a lot on how you set up your database fields.

With graphics, again there was great variation – not only depending on the type of image stored, but also on the type of file used to store it. I used a borrowed Apple Scanner to creat a range of PICT, TIFF and MacPaint files – all the same size, the same resolution, and all from the same line drawing. I also transferred one PICT file to MacDraft, then resaved it as a conventional MacDraw/-MacDraft file. The results are shown in Table 1.

I don't understand how we can get ratios in the compressed form which differ by 4.5 to 1 (31.5 down to 7). But I checked the figures again and decompressed the images to make sure that all the pixels were there, and this figure is correct, which suggests that even Stuffit is pretty inefficient. There are obviously redundancies in the larger files that Stuffit is missing.

PICT and TIFF files seem to be becoming the standards for Mac graphics programs, and these have compressed very poorly. So if anyone is looking for a good software-market opening, here is an avenue to explore. I guess, in the meantime, the moral is to store line graphic images as compressed MacDraw (MacDraft) files whenever you can.

For further information on Stuffit, contact Raymond Lau, 100-04 70th Ave, Forest Hills, New York 11375. □

ACCOUNTING PROBLEMS SOLVED!!

Accounting and Bookkeeping package for IBM XT/AT and Compatibles (MSDOS), and MICROBEE (CP/M) systems.

FEATURES:

- ★ Double-entry Accounting.
- ★ Profit and Loss Statement, with previous Year's figures.
- ★ Cash Book Monthly report, transaction list.
- ★ Balance Sheet with current and previous year.
- ★ Up to 220 Chart-of-Accounts.
- ★ USER decides when to close off an accounting period.
- ★ Auto sense if Bank is overdrawn (alert given).
- ★ Approx. 5000 transaction capacity on 13 cm disk.
- ★ User friendly — manual supplied.
- ★ Runs on MICROBEE BEENET and STARNET LANS.

Ideally suited for Small Businesses, Home Accounting, Schools, Clubs, etc. for everyday Financial Information. Reduce your accounting fees at tax time!

BOOKMATE ACCOUNTING SYSTEM
(Upgraded version of our popular Beekeeper System).
$105.00 (plus Sales Tax if applicable)

Further details and sample reports:
ANN COURT COMPUTER SERVICES
6 Ann Court, ASPENDALE, VIC. 3195
Tel.: (03) 580 6424. VIATEL 358064240

OKI

MICROLINE PRINTERS

Save $ $ $

SUPERB PERFORMANCE AT AFFORDABLE PRICES

Suit IBM, IBM Compatibles, PC, XT, AT, Commodore PC's, AMIGA, Atari, Microbee, ICL, NEC, NCR, PRIME, UNISYS, & Macintosh

ALL SOFTWARE *ALL APPLICATIONS*

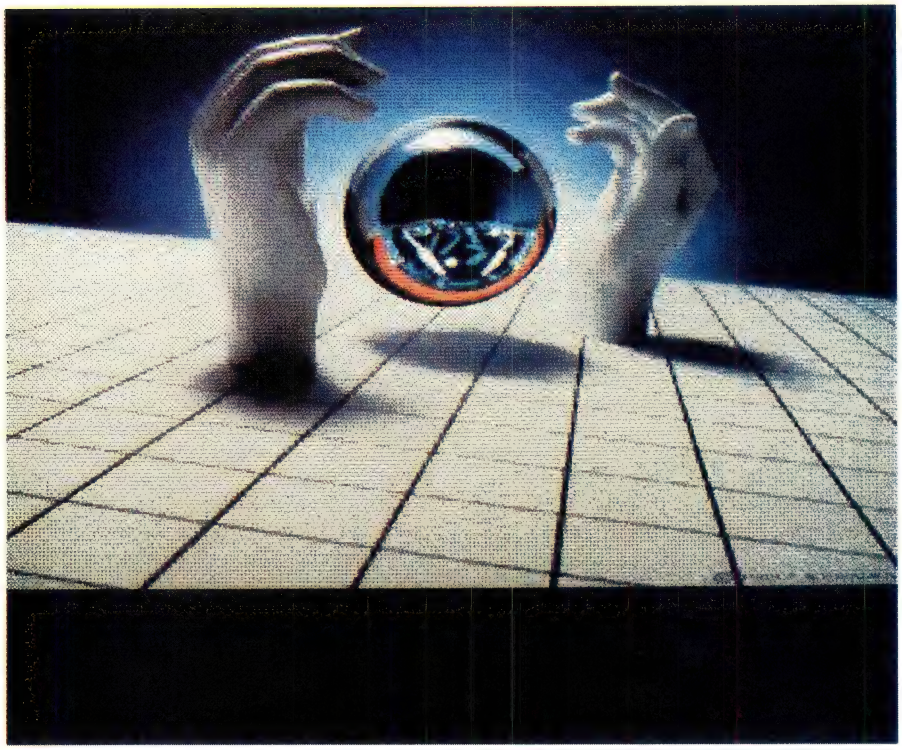
FEATURES: Draft, NLQ Print, bit map graphics, menu select, rear and bottom feed, colour

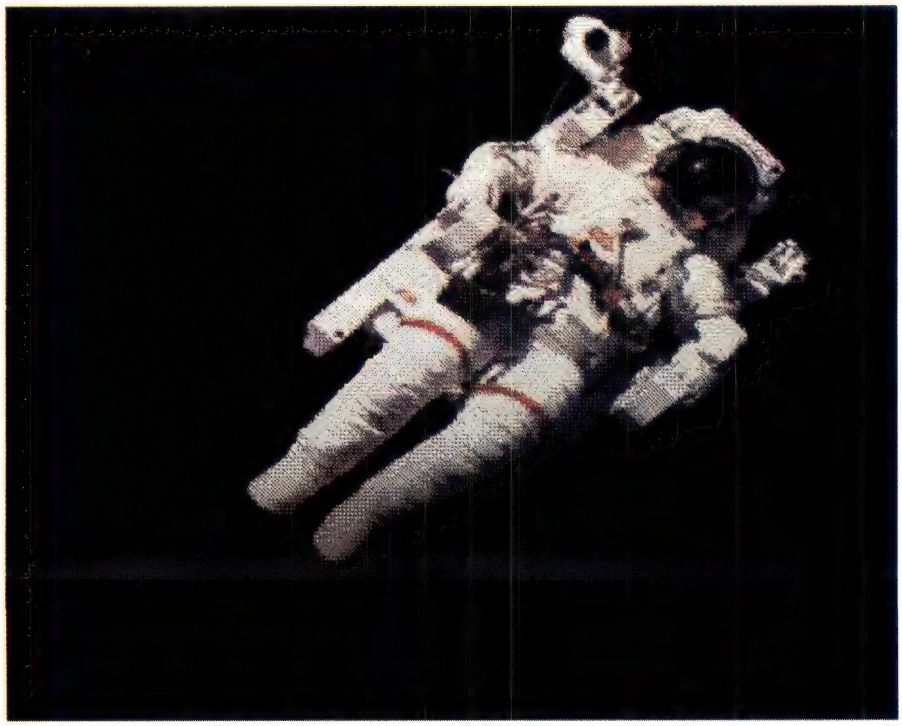
182	9PIN	120cps	30NLQ	80col
183	9PIN	120cps	30NLQ	136col
192	9PIN	240cps	40NLQ	80col
193	9PIN	240cps	40NLQ	136col
292	18PIN	300cps	100NLQ	80col COLOUR
293	18PIN	300cps	100NLQ	136col COLOUR
294	18PIN	400cps	100NLQ	136col COLOUR
390	24PIN	270cps	90LQ	80col
391	24PIN	270cps	90LQ	136col
393	24PIN	450cps	120LQ	136col
LASER		6 ppm	300dpi	8Fonts Resident

Service — Ribbons — Toners

RIBBONS, ROLLS & PRINTERS PTY LTD
48 New Illawarra Road,
BEXLEY NORTH, NSW 2207
Ph: (02) 507 663 **Fax (02) 502 1152**

YOUR AMIGA





Deluxe Photolab

Help! I never thought I'd be complaining about too much good software for the Amiga. The rate at which good stuff is coming out now is incredible. Last month I was carrying on about Photon Paint, about what a marvelous HAM mode paint package it is, with 4096 colours and wrap-around facilities and all . . .

Well, here it is a month later and I have to tell you that Photon Paint is not alone. Those clever people who brought you Deluxe Paint have done it again. The latest offering is called Deluxe Photolab and it is a HAM mode paint package with lots of good things – HAM mode means that 4096 colours can be used in the drawing and you have your choice of interlace or non-interlace (200 or 400 lines) height.

Deluxe Photolab permits overscan and super-bitmaps which means that your picture can be *big*. One of the demo images supplied is 650 *x* 620 pixels (more about big pictures later). The controls are basically similar to those of Deluxe Paint II, but rearranged to occupy only two horizontal bars across the top of screen. As with DP II, these can be hidden by the F9 and F10 keys. Some of the functions of Deluxe Paint II, like brush selection, are now chosen from drop-down menus rather than from the side bar.

A few of the more riveting functions of Deluxe Paint II, perspective for example, are not implemented in Deluxe Photolab but then you can't have everything. There's plenty in this package to keep budding Leonard d'Amigas busy for a long time. Shading is supported – *a la* DigiPaint – and the HAM palette is a blast. The multiple paint functions – solid, add, subtract, average and so on – provide plenty of room for experimentation and the effects obtainable are magic. I've even been able to get clouds to look like clouds and fog to look like fog (and believe me, Canberra boys know all about fog!).

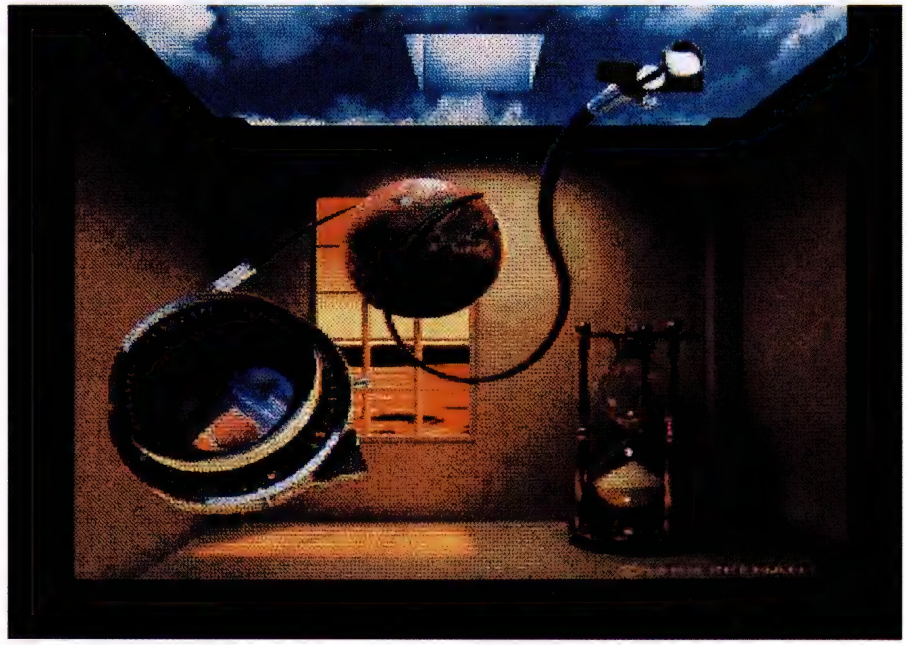
The example images supplied on the accompanying art disk give an excellent idea of Deluxe Photolab's capabilities (as can be seen from the images with this article). Working with HAM is now, thanks to this package, as easy as working in 16 colours. Deluxe Photolab seems to make better use of the HAM 'process' than does Photon Paint – there are not so many of those weird streaks and colour changes during drawing and brush movement.

The graphics on these pages were taken from the art disk supplied with Deluxe Photolab.

Poster size

Deluxe Photolab includes a utility which will be loved by anyone who can lay hands on a colour printer. The POSTER utility permits an IFF image (from any paint program – not just Deluxe Photolab) to be printed at any size up to about three metres square. Yes, that's right, I said *three metres* square. It achieves this by printing panels, each about eight inches wide by full height. The panels can then be stuck side by side, bill board style, to produce the final image. I've printed a couple of images at 32 inches by 19 inches (four panels wide) and they are stunning.

All in all, I'm most impressed by Deluxe Photolab. It includes the most useful facilities from Deluxe Paint II with the extra impact of 4096 colours and the controls seem to operate more quickly than those of DP II. The image format selection and file selection menus are different to Deluxe Paint II, but are very effective and easy to get used to. In summary I would highly recommend Deluxe Photolab to all Amiga users. It is acceptable for beginners yet offers a lot to experienced paint package users. Even if you own Deluxe Paint and Photon Paint, this one is still well worth a look.



Fan mail

Enough of my enthusiastic ravings for a while. Among the thousands of fan letters received this month (well, no, they're not all for me) was a letter from one Thavone Thep of Macquarie Fields in NSW. Thavone is 16 years of age and must be about the greatest fan of the Amiga that I've ever heard of. According to Thavone he eats, sleeps and lives Amiga. Thavone's problem is that, along with a lot of other 16 year-olds (and a lot of older folk, too) he cannot afford an Amiga of his own. Thavone feels bad about not having his own computer. The more I thought about it the more it got me wondering . . .

Ten years ago no one had heard the term 'personal computer' or 'home com-

puter'. Even video recorders were few and far between. About the most exciting technology most teenagers had access to was a ghetto blaster. Now, just ten years later, we have a situation where teenagers feel left out because they don't own their own computers. The simple fact of life is, there are a great many families which just cannot afford a computer, or choose to prioritise other things ahead of a computer. So how do you explain that to a distressed 16 year-old?

I guess it's a sad part of our society that all sorts of media push us to expect instant gratification. We're all persuaded that we must have *it* right now, today, immediately! To tell a 16 year-old to find a way to earn twenty bucks a week and save to buy a computer is *passe*. These days it has to be now or never, and that's sad.

So much for philosophy – back to computers. For the past five months I've been presenting, here in Canberra, a series of training sessions devoted to the Amiga computer. After spending a lot of time talking with the participants of these courses, I've identified a couple of very commonly held opinions concerning the Amiga.

Firstly, a lot of people who are buying the Amiga have little or no computing knowledge and are finding themselves out of their depth almost immediately. And secondly, once Commodore (through their retailers) have the buyer's cash, they don't seem to care a great deal about user satisfaction.

The biggest problem that my contacts have experienced is this: once they have had their Amiga for a short time and they start to realise how little they know about driving the machine, where do they turn for help? There are a few books around which promise 'beginners introductions', and some of them actually do make concessions to the beginner, but invariably they're written by people who my friend Brian would refer to as 'propeller heads'. After the first few carefully constructed sentences they invariably lapse back into techno-speak and the beginner is lost.

The people who attend my courses appreciate the opportunity to ask questions and to have them answered in English. They are also pleasantly surprised to find that they are not alone. Typical of the comments I hear is: 'I asked the fellow in the shop to explain (something) to me and he looked at me as though I was totally stupid and then said a few sentences full of words I couldn't even find in the dictionary.' In every course someone tells a similar story, and it is invariably greeted with ironic smiles and nods of agreement from the other participants.

There seems no simple solution to the problem. The Amiga is an extraordinarily powerful computer. Ten years ago a computer of the Amiga's capability was tended by specially trained operators, kept in a secure, air-conditioned room, and programmed by people with years of specialist training. Now Commodore would have one in every home.

Commodore initiated a training project some time ago, but in usual Commodore style kept it a secret so no-one's ever heard of it. User groups can help, but often raw beginners are overwhelmed by the tech-talk which frequently becomes the norm at such gatherings. The only other alternatives seem to be spending enormous amounts of money on books and magazines, or simply sticking to only running commercial software packages and, thereby, missing out on a great deal of the usefulness of the machine.

If more and more powerful computers are going to be sold to normal everyday families and small businesses, some provision has to be made to provide inexpensive and effective training. Retailers have to realise that after-sales help and advice is a necessary part of their selling process. Otherwise people will pretty quickly get sick of the sight of an expensive dust collector around the house.

Anyway, happy computing until next month. □

NEW
MAC I + II
PUBLIC DOMAIN
& SHAREWARE
CALL FOR DETAILS

MS-DOS SOFTWARE $5.00 A DISK

A COLLECTION OF 1400+ DISKS

OUR CURRENT RANGE OF SOFTWARE INCLUDES:

CATEGORY	No.	DISKS
Artificial Intelligence	9	Disks
Business Applications	110	Disks
Computer Education	21	Disks
Desktop Managers	32	Disks
Entertainment	70	Disks
Games	61	Disks
Home Applications	50	Disks
Maths/Scientific/Stats.	44	Disks
Misc./Special Applicat.	114	Disks
Wordprocessor/Editors	73	Disks
DOS/Disk Utilities	56	Disks
Misc./General Utilities	77	Disks
Printer Utilities	27	Disks
Bulletin Board Software	33	Disks
Communications	73	Disks
Databases	89	Disks
Education	44	Disks
Financial Applications	45	Disks
Graphic/Drawing	51	Disks
Languages	79	Disks
Reference Materials	31	Disks
Spreadsheets	56	Disks
Screen Utilities	20	Disks
Encode/Decode Utilities	56	Disks
Language Utilities	37	Disks
Programmer Utilities	18	Disks

We are adding approx. 30 new disks to the library each month.

S.M.E. Public Domain P/L offers membership in the oldest, and largest collection of public domain software in Australia.

For your $40 first year membership you receive the latest catalogue (over 200 pages) and monthly catalogue updates and newsletters.
All disks (with an av. 15 programs) are listed in 26 easy-to-find categories.
Cost per disk:
5.25" format Self serve $5.00 Mail order $6.00
3.5" format Self serve $10.00 Mail order $11.00

SME

PUBLIC DOMAIN

Established 1976

MELBOURNE 22 Queen Street, Mitcham, Vic. 3132.
Tel: (03) 874 3666 Fax: (03) 873 4086
SYDNEY 155 Eldridge Road, Bankstown Tel: (02) 796 3380

RING YOUR NEAREST OFFICE TODAY
OR WRITE OR FAX YOUR APPLICATION TO:
S.M.E. PUBLIC DOMAIN SOFTWARE LIBRARY,
22 QUEEN STREET, MITCHAM, VIC. 3121
PHONE: (03) 874 3666 FAX: (03) 873 4086

Surname ..... First Name .....

Optional Address .....

Street Address .....

Town/City ..... Postcode .....

Phone No. (.....) .....

Payment by Cash ☐ B/Card ☐ Visa ☐ M/card ☐ Cheque ☐

Card Number ..... Expiry Date ...../.....

Signature .....

YC/11

SHARON FRANCE

MICROBEE FILE

Three faces of software

A software reviewer's lot in life is not always easy. It would be marvelous to be able to get outstanding pieces of software and always present glowing, detailed user accounts with 'Highly commended: buy a copy immediately' as a generous but well deserved conclusion. Life is not like that and, of course, many pieces of software are far from perfect. The problem with the Microbee and its core of avid and dedicated software producers is that there are not the funds nor the human resources to produce top quality all the time.

There is a big plus with Microbee software – it gets better all the time (as indeed does the equipment). It is unfair to expect small software producers to come up with super slick, finely polished and documented software when you consider the smallish target market and that most of the software writers do it in their spare time as an adjunct to, say, being a teacher.

This is all sounding pretty ominous. What software has she got her hands onto, and which unsuspecting software writer is about to wear her criticisms? The answer is Kerwin Software and my intentions really aren't as bad as I have built them up to be. What I wish to stress, before getting into a review of three Kerwin titles, is that there is a discernible improvement in the software produced by this Queensland Primary school teacher, with his latest educational game Logic Ants one of the most enthralling and imaginative pieces of software I have seen on the Microbee for some time.

Early days

I was, in fact, sent six titles to have a look at but, decided to home in on three which I think reflect distinct phases in Kerwin's Software development and which indeed represent what many software writers experience as new techniques are tried and tested. The first I opted to look at was Spell of Words.

The first thing that hit me about this program is that it seemed to be pretty straight forward – select one of five word games all tantalizingly brought together with a theme of magic. From the top, I got into Hilga's Hiccups, which required me to unjumble letters to make words. I enjoy anagrams and don't mind admitting that I found some of the combinations tough, but then again, it would be hard for most people to try to unjumble words without clues – especially sets of seemingly unrelated words of various lengths. But this is because sets of words are supplied – thankfully one's own lists can be generated, perhaps also based on themes.

What software has she got her hands onto, and which unsuspecting software writer is about to wear her criticisms?

The game allows you three attempts to get the letters into a meaningful array before Hilga burps forth her answer. It was here that I became a bit unstuck, when, after an unsuccessful attempt by me, the letters were projected on the screen, rejumbled but they weren't the same. This happened on more than one occasion. For example –

Round 1: Letters presented: KCLEAC;
my attempt: CLACKE
Round 2: Letters presented: CKLEC;
my attempt: CLECK
Round 3: Letters presented: LAKCE;
my attempt: CLAKE
The Answer: CACKLE!

Something is a bit rotten in the state of Denmark, or perhaps part of Hilga's brief is to make letters randomly disappear – but this is nowhere in the documentation.

On to Missing Mixture and what turns out to be conjured version of the old favourite, Hangman. This however, was not explained in the documentation. I was simply told to 'pop the bubbles'. But how? After several frustrating attempts of typing in all sorts of words and letters, I found that the program was responding to only the first letter I typed into the space provided. This may sound simple and logical enough, but when typing in a response, the cursor moves along, indicating (to me at least) that more information is needed; a small point which can either be rectified by a note in the documentation or a fix in the software. Once I got the hang of it, I found this variation on the old theme quite a lot of fun. The graphics and use of screen space are commendable.

Wizard's Wand is a bit more straight forward and requires you to spot smaller words within a larger word. There is no mention of whether the letters have to appear sequentially to count or not, but I made my own conclusions after trail and error. I thought that CLASSROOM may only have been allowed to be broken into CLASS and ROOM, but the software extends beyond that and recognises anagrams such as MOOR, ARC, MARS, LASS and so on. Points are scored on a per letter basis and a cumulative total is displayed to the screen. If the program does not recognise a word you have put in as an answer, it asks 'Is it in your dictionary?' If you say yes you are allowed to get away with murder and score top points (in this case 9) for SSALMROOC! This is probably unfair since the management of dictionary files would really be overkill for such a program, but it is worth noting. Perhaps too, there is a bit of an inbuilt lesson in trust which wouldn't go astray if supported correctly by teachers.

The biggest Trick or Treat is with Black Cat. It is another computer version of Mastermind, but I'm afraid that I found it to be very frustrating. For a start, when playing the board game, you know how many pieces/pegs are employed in the pattern. When the prepared lists are used with Black Cat, words from three to five letters are presented at random. This makes it a bit more difficult to try to logic the whole thing out. The answer is, of course, to make your own lists of three, four or five letter words. I did this using the last option on the menu, The Spell Book, and ended up with an 'impaired brackets error'. This, coupled with an amount of screen garbage generated in the midst of disk swaps, indicates that there is a bug or two to be shaken out of this software!

Although not original, the games are

educationally sound, and as I mentioned before, are well tied together with a thematic magic approach. The graphics are also enchanting. When the bugs are fixed and the documentation becomes a bit more helpful, the package will be useful in the classroom.

Middle ground

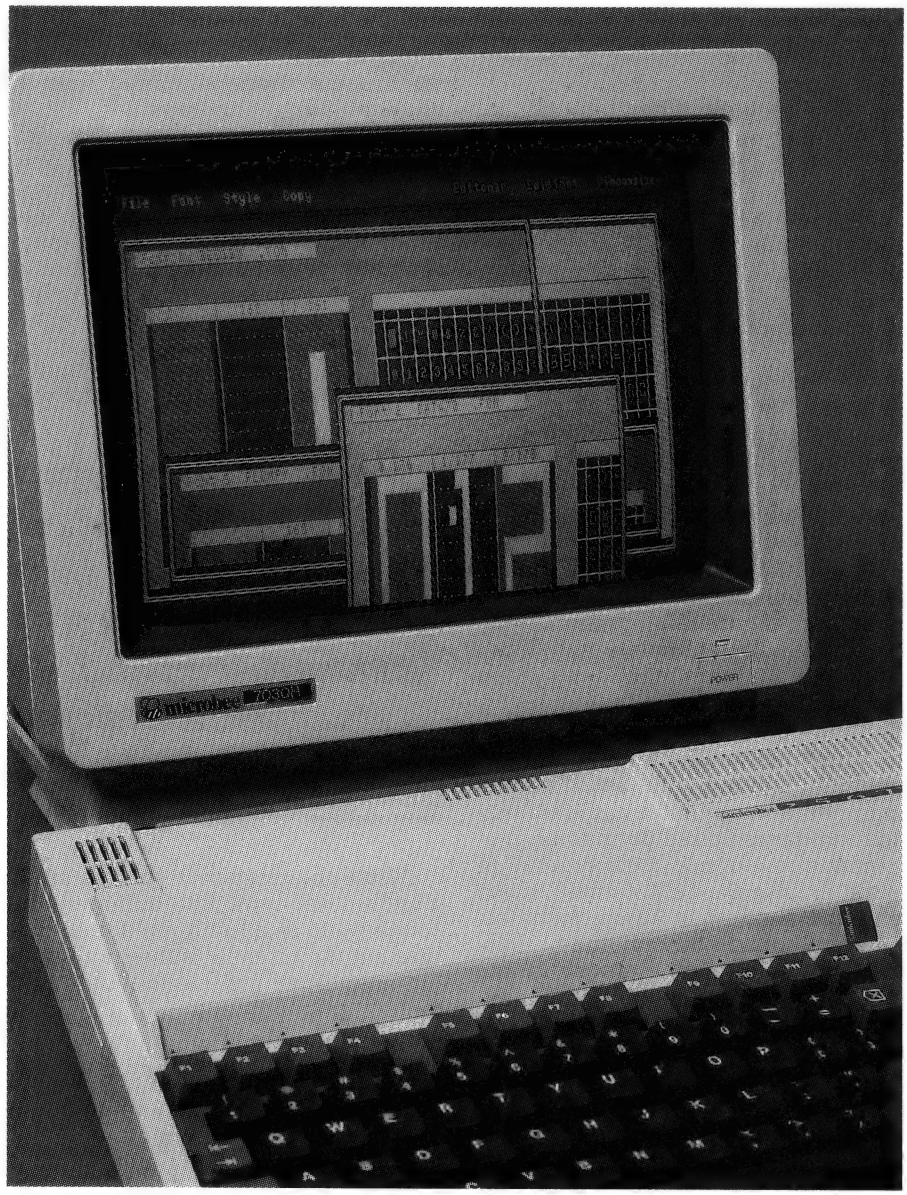
There are many programs which are mediocre. For one reason or another, they do not make it as being top rate software. Perhaps the idea is not inspiring but is lifted because the program runs like a dream, or the program concept is really imaginative and practical, but it is let down by annoying bugs in the software, which slows the whole thing down. Identikit fits into the latter category.

Identikit is a hi-res program which allows the composition of unique faces using different combinations of facial parts. The end product is not unlike the police identikit pictures which we see on the six o'clock news, except the computer software version does not employ shading and half tones and is geared more towards fun and imagination rather than the serious portrayal of wanted criminals.

The software concept is very good and evokes the imagination of the user. Identikit is basically a tool for use in conjunction with book reviews but it could be used to great effect with other units of work, adding fun and variety to the daily classroom routine.

The program has two parts: the written dossier, which you type in (in response to a set of prompts) and the identikit picture, which you construct from a gallery of face parts and accessories. When the software is fired up, you are presented with an example of 'the possible' – a newsreader look-alike person on the title screen. You are then presented with a set of menu blocks. As directed by the documentation, I set the software up to acknowledge that my data disk would be in the A: drive. I was now ready to experience Identikit.

I continued to follow the documentation, and opened the EDIT MENU (5), selected the NEW POSTER option and then the type I required – WANTED, REWARD, BOOK REVIEW or POLICE FILE. I proceeded to answer questions about my character and filled in the blanks against NAME, STORY, OCCUPATION, DESCRIPTION, TOWN, REASON WANTED and REWARD OFFERED. Some of these options seemed a bit obtuse for a book review, but I went along with it. One thing that I found annoying at this stage, as my creativity and imagination ran wild, was that some of the villainous names and exotic places I wanted to have in my poster could not be typed in. There is no visual prompts to guide you, nor any mention of the number of characters allowed per item in the documentation. By trial and error I figured out the parameters (and they are 20:23:12:9:9:22:24 for the above mentioned options).



After I had been thoroughly interrogated about my character, I was given the option of editing the information or continuing. I found that if I opted to edit, the program in fact wiped all of the information in its crudest form. Finally happy with the input, I pressed the Space Bar to continue and was again presented with the main menu. I then had to save my file, through a process of selecting the DISK MENU, the DISK WORK option and then SAVE FILE. After

typing in the name of my file, I swapped disks a number of times (remember I was using the A:/L: drive for data storage). An amount of disconcerting garbage made its way into the screen during disk swaps but had no noticeable effect on the performance of the program. With my file how saved and in memory, I went on to complete phase two of the exercises.

I selected the EDIT option again and from there went into EDIT a FILE. I was then presented with an outline of a person's head and shoulders and a set of menus which sat across the top of the screen. I went into CUT and PASTE and was then presented with a gallery of face parts. I moved the cursor with the arrow keys, and selected the bits I wanted by pressing the space bar. With each selection I was taken back to the head and shoulders shot, where the nose, mouth or eyebrows I had chosen were drawn on. I had the option to keep or dump each selection and within minutes, had a rather rugged individual pasted up before my very eyes. When I was happy with my creation, I exited this part of the program, which automatically saved my file to disk (more disk swapping!).

I could hardly wait to print out my creation. I selected 3, the PRINT option, and nothing happened. I was a bit puzzled and finally worked out that my program was no longer in memory. I had to reload it using the DISK option (2), and felt a bit annoyed at having to do so. Perhaps I would have not felt so frustrated had this been explained in the documentation.

Okay, with my field now resident in memory, I was ready to print. I was dying to see what was going to be the end product of my labours. The first half of the file was printed to the screen and then dumped to the printer. The printer whirred into action and then paused as the bottom half of the poster was printed to screen and then dumped.

My reactions were mixed. I thought that the overall presentation of my Reward Poster was great (an authentic touch was achieved by having slightly torn edges and bullet holes through the banner). The print of the identikit mug shot was simple but just right for this application. The lettering on the poster was bold and easily legible.

But I was disappointed with the results of my typed information. The program manipulates the input and slots it into a skeleton structure which is plainly aimed at conveying information in a book review fashion. I think printed examples of each poster should be part of the documentation. This would give direction to what sort of input is appropriate and cut down on wasted time in producing nonsense posters.

One major problem I experienced with the program was getting into corners and not being able to get out. For example, I attempted to open a file and was issued with the error message 'Cannot open that file, press space to try again'. I did and found that no amount of space bar pressing was going to have any effect, but there was no other option: no avenue for escape. I had to resort to the final leveler – the reset button. This should never have to happen.

Take it from me, when you get a copy of this program, don't be cocky and employ a bunch of shifty ants to recall an intricate nest.

Overall the program is good. It needs a fair amount of work in tidying up the software and broadening the documentation, but the potential is there for a useful, imaginative and creative classroom tool.

Top of the pile

In true form, I have saved the best for last. It's good to end on a positive note and Kerwin's program Logic Ants brings a smile to my lips every time I think about it.

It is a simple concept, and if you are into mazes, this is for you. There are three levels of play, in which you get to direct a set of ants to either build, match or recall a nest pattern. The nests (and there are several already on file on the disk, or you can build and save your own) are conglomerate patterns of large simple shapes.

Let's have a quick look at each of the levels of play. Level One is to build a nest. By selecting this option (press the Space Bar at the main menu) you are taken to a sub menu. From here the defaults may be changed. The program can be controlled by a variety of input devices – keyboard, joystick and mouse. It's good to see tha provision has been made so that the sound can be turned off (always a Godsend in a classroom environment). This, and the other levels of play, has a demonstration option which takes you through the game, and supplies a helpful commentary at the base of the screen.

Once into the game proper, you are presented with an array of odd geometric shapes, from which you must select five to construct your ant nest. On screen help makes it very clear as to how to select the shapes and how to exit to the next stage in the game.

We are now ready to construct a nest. A working screen is presented with seven doors at the top of the screen, a working box area mid-screen and instructions at the bottom. The first five doors each contain a shape which you selected. The last two doors house a broom and provide an exit. Pressing Return opens a door and out pops an ant. He jumps onto the screen and awaits your directions. He is moved around the screen using arrow keys and deposits the shape he carries when you press Return. When you have laid out a pattern with one shape, you open the next door and call out the next ant by simply pressing the Space Bar. You continue to do this until you are satisfied with the nest you have constructed. If you make any mistakes, you bring out the broom and brush them into oblivion. It's so simple. When you select the Exit door in this level, you are asked to allocate a number to this nest. The program throws up the number 1, and you can space through to whatever number you want (up to 20). The program doesn't warn you if you already have a nest allocated to a particular number, so take care and perhaps keep a log if you are worried.

Enough of this fun. Let's get down to some serious work. In Level 2 – match a nest, the program presents a nest on screen and you are required to match it exactly. The sub-menu for this level again gives you a number of options, including the selection of the type of nest you with to match (easy, intricate, crafty and yours) and the type of ants you wish to have in your employ (easy, shifty and difficult). These options add extra dimension to the game. The real challenge is to predict and control the shifty and difficult ants (you will understand why when you play the game!).

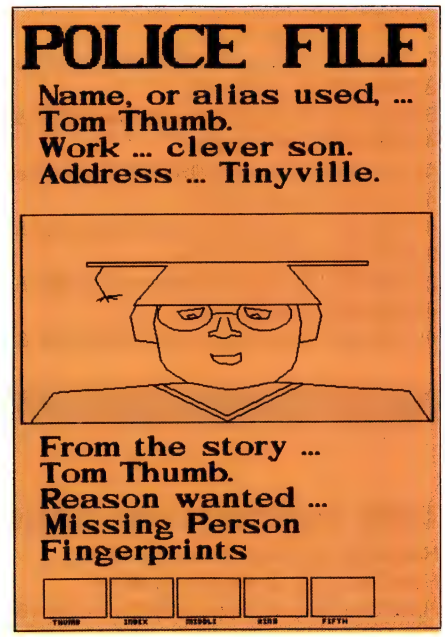
There is an element of competition with this and the next level of Logic Ants. You are trying to win the approval of the Bull Ant (the mastermind behind the nest building and the boss of the nest) and gain a promotion. The more economical you are in your moves around the screen and the type of ants you choose to have in your employ, determine your score and your promotion.

When you think you have finished matching the Bull Ant's nest (depicted in the right-hand work area) you move to the exit door. If you have worked well and have produced an exact replica, you are given a score and perhaps promoted. If you fail to perform, you are sent back to try again.

If you think that Level Two would test your skills, you would find Level Three a mental work-out. You are again allowed to select your environment (sound on/-off, input device and type of nest) and your style of ant help. But this time, you have to keep a mental picture of Bull Ant's nest in your head. There is one working area and when you start a game, the nest you have to recall is presented on the screen. The clock starts ticking. Pressing the Space Bar makes the nest disappear and you get to work trying to reproduce it. You are allowed to peek at the original nest (by pressing P) but numerous peeks will go against you in the long run. And the clock keeps ticking. When you have finished, make your way to the Exit door. Take it from me, when you get a copy of this program, don't be cocky and employ a bunch of shifty ants to recall an intricate nest. It is well nigh impossible (well, for me anyway).

What other praise can I heap onto this program? It seems that Kerwin has really got his act together with he software. The only bugs I came across in the program were the little ants themselves. I tried a couple of ridiculous key sequences and the program stood up to it. At last we also have a means of escaping from anywhere within the program. Pressing Esc at any time lands you back at either the main menu or one of the submenus. Great!

And the documentation? It is very good. It introduces the program and goes on to step us through each of the levels of play. It even has a section on handy hints and a copy of the shapes used in the program. This could be put to good use if computer equipment is scarce in your classroom. The kids could set to work with graph paper and pens to design a nest and then transfer it onto the computer.



This program is not only a lot of fun (addictive fun at that!), it is also a sound educational tool. It would sit well in any Primary school classroom and could be used in maths (for example, to demonstrate concepts of topology), in Language (as a springboard for creative writing) or just as a great time-out exercise. It would also be an excellent game for home for the while family and a great time consumer on rainy days. Its simplicity is its major advantage allowing applications to be limited only by the extent of your own imagination.

Logic Ants is highly commended: buy a copy immediately! Do you somehow get the feeling that I like this program? I hope that is representative of what we will be seeing from Kerwin in the future. There is always room for sound educational software which runs well and is supported by good documentation.

I hope that all software producers take heed form the constructive criticisms I have made about Kerwin's software and the lesson I have tried to draw about software and its evolution. I think that a lot of software writers suffer from the difficulty of being to close to their own work. Software, especially for schools, must be thoroughly trialled in schools and, preferably, not by the author. We all know how to drive our own cars and to nurse their idiosyncracies. Give your car (or software) to the next door neighbour to test drive and you may hear the gears crunch all the way down the road.

To get your copy of Logic Ants (for $39.50) to run on your Premium Microbee, write to Kerwin Software, 27 Harris Street, Redbank Plains 4300 Qld. Also ask about what other new titles he has and any updates of the other titles reviewed here. I know that he will be busy making improvements. □

BUY YOUR UPGRADES DIRECT AND SAVE

HARD DISK DRIVES

SEAGATE

21 MB 5¼" Drive 65 MS	$390
21 MB 5¼" Drive 65 MS with Controller & Kit	$465
32 MB 5¼" Drive 65 MS	$435
32 MB 5¼" Drive 65 MS with Controller & Kit	$570
42 MB 5¼" Drive 40 MS	$655
42 MB 5¼" Drive 40 MS with Controller & Kit	$740
42 MB 5¼" Drive 28 MS	$790
42 MB 5¼" Drive 28 MS with Controller & Kit	$875
21 MB 3½" Drive 40 MS	$475
21 MB 3½" Drive 40 MS with Controller & Kit	$590
49 MB 3½" Drive 40 MS	$775
49 MB 3½" Drive 40 MS with Controller & Kit	$930

NEC

20 MB 5¼" Drive	$454
20 MB 5¼" with Controller & Kit	$546
30 MB 5¼" with Controller & Kit	$577
40 MB 5¼" Drive 40 MS	$907
85 MB 5¼" Drive 28 MS	$1610

HARD CARDS

21 MB Disk 40 MS on a Card Complete	$649
	$595
42 MB Disk 25 MS on a Card	$1149

ADD ON CARDS

DISK CONTROLLER CARDS

Hard Disk (2X) Controller 8 Bit PC/XT	$151
Hard Disk (2X) Controller 16 Bit AT	$229
Hard Disk (2X) & Floppy (4X) Controller 16 Bit AT	$291
Hard Disk (2X) Controller — RLL 8 Bit PC/XT/AT	$172
Hard Disk (2X) Controller — RLL 16 Bit AT	$249
Hard Disk (2X) & Floppy (2X) Controller 8 Bit PC/XT	$215
ESDI Interface for 170MB Drive AT	$616
Advance Universal Floppy (4X) Controller PC/XT/AT	$102
Floppy Disk Controller (4X) PC/XT	$72
3.5" External Floppy Controller. AT	$95

MULTIFUNCTION CARDS

Parallel, Serial, Game Port, 1.5MB Capacity, Zero K AT	$206

MULTI I/O CARDS

Floppy (2X), Printer, RS232, Clock, Game Card PC/XT	$146
Clock/Calendar Card PC/XT	$55
Clock/Calendar/RS232 Port PC/XT	$86
Printer Port PC/XT	$46
RS232 Port PC/XT	$72
Multi Serial 4 X RS232 Ports PC/XT	$135
Multi Serial 4 X RS232 Ports AT	$135
RS232 Port, Printer Port PC/XT	$80
Printer, RS232 (2nd Optional), Clock, Game Port PC/XT	$102
Printer, RS232 (2nd Optional) AT	$102

VIDEO CARDS

Mono, Hercules Graphics, Printer Port PC/XT/AT	$117
Colour Graphics, Printer Port PC/XT/AT	$112
Colour Graphics, Mono, Hercules, Printer Port PC/XT/AT	$168
EGA, CGA, MGA, HGA, Multisync 80386 Only	$259
EGA, CGA, MGA, HGA, Multisync, Double Scan PC/XT/AT	$299

MEMORY EXPANSION CARDS

Memory Expansion 64-640K Zero K PC/XT	$59
Memory Expansion 2MB EMS Compat. Zero K PC/XT	$142
Memory Expansion 2MB EMS Compat. Zero K AT	$210
Memory Expansion 128K Zero K AT	$65
Memory Expansion 1MB Zero K AT	$80
Memory Expansion with 2MB 100 NS Chips for 80386	$1816
Memory Expansion with 8MB 1MB Chips for 80386	$3587

PROCESSOR BOARDS & MOTHER BOARDS

8088-CPU Board Turbo 4.77 & 8 MHZ Zero K	$159
8088-CPU Board Turbo 4.77 & 10 MHZ Zero K	$189
8088-CPU Board Turbo 4.77 & 10 MHZ 640 K	$659
286-CPU Board, 0 Wait, 8 & 10 MHZ Zero K	$583
286-CPU Board, 1 MB Ram, 0 Wait, 8 & 10 MHZ	$1332
386-CPU Board, 2 MB Ram on Board, 0 Wait, 20 MHZ	$4299

DISKETTES

LIFETIME WARRANTY

5¼" DISKETTES

10 BRAND 2S 2D 360K	$0.99
BASF 1.2MB	$3.50

3½" DISKETTES

VERBATIM DATALIFE 720K	$3.60
VERBATIM 1.44 MB	$8.39

DATA CARTRIDGES

VERBATIM DL 2000 40 MB	$41.00

ADVANCE Peripherals
EXPANDING COMPUTER POWER

ADVANCE PERIPHERALS PTY LTD
Suite 3, 846 Pacific Highway.
(P.O. Box 215) Gordon. N.S.W. 2072.
Prices Quoted Include Sales Tax
Prices Are Subject To Change Without Notice

TO ORDER PHONE
(008) 25 1489
FAX: (02) 498 2665
IN SYDNEY CALL
498 2411

BUY YOUR UPGRADES DIRECT AND SAVE

3½" EXTERNAL DISKETTE DRIVES — $351

NEC 3½" 720 K Drive/Steel Case/37 Pin Plug
XT/AT Compatible — Must use DOS 3.2/3

TAPE BACKUP

Mountain Tape Backup Drive complete with Software and Manuals.

TD4440 ..... AT Compatible
TD4340 ..... XT Compatible — **$795**

5¼" EXTERNAL DISKETTE DRIVES — $490

FOR PS/2 MODEL 25/30/50/60/80

- ★ Attractive Case
  Includes All Fittings & Software
- ★ Allows PS/2 to Read and Write 5¼" Disks
- ★ Software on 5¼" Disks can be run directly by PS/2 Machines.

ACCESSORIES

Keyboard Tactile 101 Keys. Switchable to PC/XT/AT	$132
Chassis to Fit 3½" Floppy in 5¼" Slot	$ 30
Micro Mover — Steel	$399
Printer Cable	$ 25

MONITORS

NEC Multisync II 14"	$1150
NEC Multisync 15" Hires	Call
NEC Multisync 20" Hires	Call
THOMPSON 14" TTL Dual Scan	Call

PRINTERS

Brother M1109 80 Col 100/25 NLQ 9 Pin	$436
Brother M1709 132 Col 240/50 NLQ 9 Pin	$942
Brother M1724L 132 Col 216/72 NLQ 24 Pin	$1297
NEC P2200 Pinwriter 80 Col 140/60 NLQ 24 Pin	$665
NEC P5 with Pin Feeder	$1711
NEC P6 with Pin Feeder	$930
NEC P7 with Pin Feeder	$1225
Oki Data ML182 80 Col 120/20 NLQ 9 Pin	$397
Oki Data ML183 136 Col 120/20 NLQ 9 Pin	$751
Oki Data ML193 136 Col 240/40 NLQ 9 Pin	$981

MODEMS

300/1200 BPS Full Duplex External
Hayes Compatible V21, V22 ..... $287

300/1200/75 BPS Full Duplex External
Hayes Compatible V21, V22, V23 ..... $359

DISKETTE DRIVES

NEC Diskette Drive 5.25" 1.2MB (Reads/Writes 360K)	$231
NEC Diskette Drive 3.5" 720K	$245
NEC Diskette Drive 3.5" 720K. External	$351
Sony Diskette Drive 3.5" 1.44MB	$310
Sony Diskette Drive 3.5" 1.44MB. External	$399
TEAC Diskette Drive 5.25" 360K	$180

MOUSE

GENIUS MOUSE — $139
Dr. Halo III Software. Super Tracking Speed. Programmable Resolution. Pop-up Menus. Menu Maker. Mouse Pad. Mouse Pocket. 3 Button Serial.

WITTY MOUSE — $70
C400 3 Button Serial.

POWER SUPPLIES

Power Supply 220W AT	$240
Power Supply 180W AT	$185
Power Supply 150W PC/XT	$125

CASES

AT/XT Case Fliptop	$109
AT Case	$147
Tower Case with 220W Power	$749

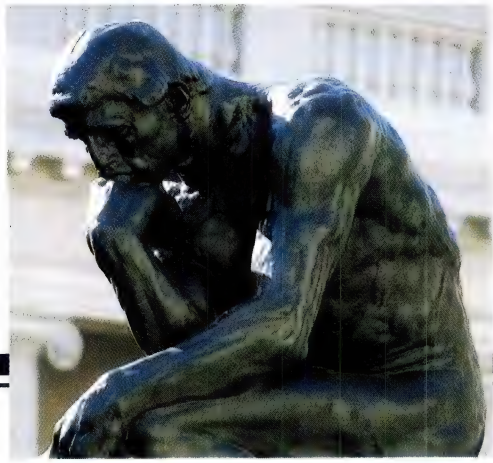
RIBBONS

Brother M1109	$12.50
Brother M1509	$17.21
Epson EX800, EX1000, LQ2500	$15.60
Epson LQ800	$13.75
Epson LQ1000	$13.16
Epson LQ1500	$12.70
Epson LX80	$9.10
Epson MX80	$10.84
Epson MX100	$13.74
Epson MX100 Refill Pack	$5.70
NEC P3, P7	$17.44
NEC P5	$12.46
C. ITOH 8510	$9.10
Oki Data M80	$3.08
Oki Data M84	$8.69
Oki Data ML182, ML183, ML193	$11.20
Panasonic KXP110	$12.70
Riteman 12	$14.80
Toshiba P1350	$13.94

ADVANCE Peripherals
EXPANDING COMPUTER POWER

ADVANCE PERIPHERALS PTY LTD
Suite 3, 846 Pacific Highway.
(P.O. Box 215) Gordon. N.S.W. 2072.
Prices Quoted Include Sales Tax
Prices Are Subject To Change Without Notice

TO ORDER PHONE
(008) 25 1489
FAX: (02) 498 2665
IN SYDNEY CALL
498 2411



KURTA out-thinks ordinary tablets.

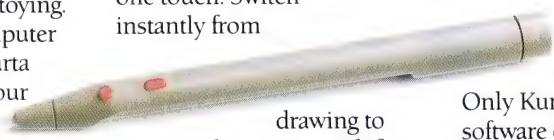
It only looks like a tablet.

If you have been toying with the idea of getting a graphics tablet or digitizer, stop toying. Instead, get a total computer "Input System." The Kurta IS/ONE. Kurta turns your CAD, CAM, and CAE workstations into workhorses. For starters, you get a Kurta computer input tablet which interfaces with

IBM®-PCs, Apple®, Amiga®, compatibles and others.

A total "Input System" with programmable menu-strip.

Only Kurta gives you a built-in "Menu-Strip" featuring 5 Program Softkeys and up to 23 Function Softkeys to execute batches of your pre-programmed keystrokes with one touch. Switch instantly from



drawing to menu picking. Or switch from application to application just as fast. All at the touch of an IS/ONE softkey. No ordinary tablet lets you switch like this, back and forth "on-the-fly" at will. Kurta eliminates hundreds of keystrokes. This benefit alone is reported by users to double productivity.

Cordless cursors and pens with no equal.

Kurta offers the only cordless 4-button cursor and only cordless 3-switch pen. There are six Kurta pointing devices in all, including the new Kurta 12-button cursor for maximum application control with instant touch.

Built-in software with standards like ADI.

Only Kurta ships a software driver in every package that makes more than 98% of all software Kurta-compatible. For DOS applications, Kurta's IS PENSMITH™ driver supports the industry-standard Microsoft® Mouse Driver and AutoCAD ADI (Autodesk Device Interface) Driver. Kurta's IS PENSMITH is for IBM, and compatibles, Penworks™ for Apple and Mac, Pencraft™ for Amiga. All feature Kurta's "dynamic scaling" to miniaturize/maximize the active area.

	Summa-Graphics	CalComp	KURTA
Preassigned Menu Area	No	No	Up to 23 & Programmable Softkeys
Templates	None	Own	AutoCAD, Versa-CAD, Windows, & Custom
Cordless Pointing Devices	No	No	Yes. 3-Switch Pen & 4-Button Cursor
Warranty	2 Yr.	5 Yr.	**Lifetime**

Based upon information as of March 11, 1988.

A lifetime warranty—best in the business.

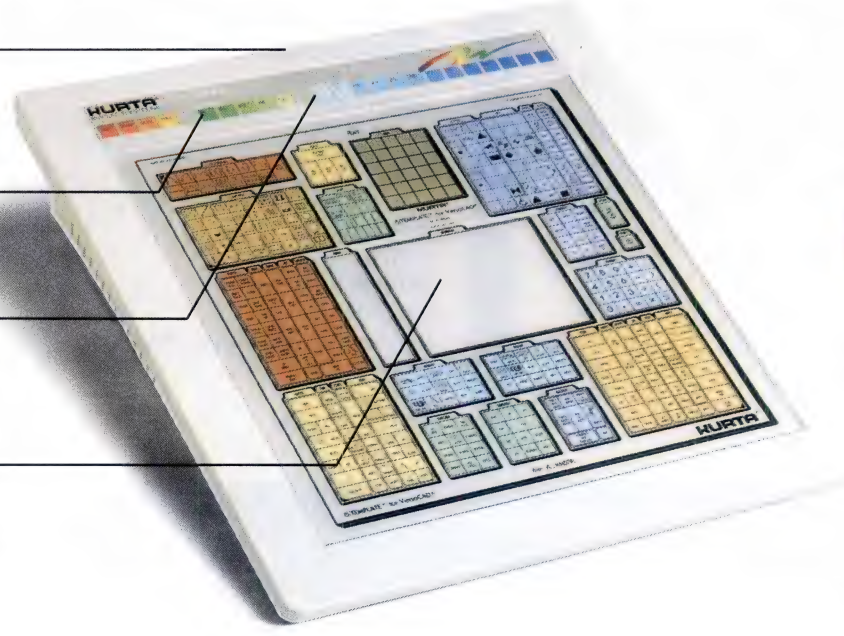
Kurta gives you better features to draw on for more practical productivity you can count on. And best of all, it is all backed by Kurta's exclusive "lifetime warranty."

A time to think, a time to act.

The Kurta IS/ONE Input System is only available from authorized Kurta dealers. Call for the one nearest you. No obligation. No alternative. Call now.

02-957 6800

PC MAGAZINE Editor's Choice



Rugged construction in 3 sizes (8.5x11, 12x12, 12x17), replaceable surface protector, and ***Lifetime Warranty.***

Program Softkeys enable instant switching from format to format, factory preset or program your own.

Function Softkeys are programmable to tasks such as keyboard macro playback, batch file recall and application switching.

Kurta Templates for AutoCAD and VersaCAD include a library of up to 600 drawings already done for you.

It only looks like a tablet.

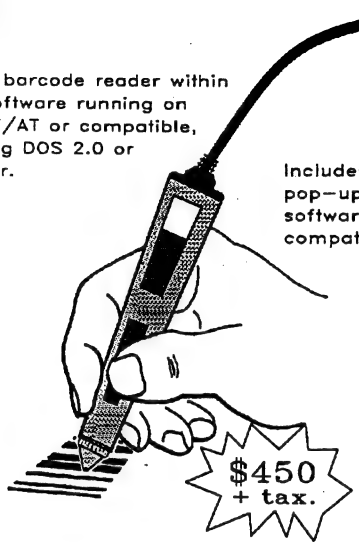
MINICOMP
104-108 Mount St.,
North Sydney 2060
02-957 6800

All ®'s and ™'s are the registered marks of their respective companies. Penworks software is designed and developed by Softweaver,® Santa Cruz, California.

The 8-page monthly newsletter for serious users of *d*Base.

dLetter – FREE every month, with subscribers' copies of YOUR COMPUTER!

BARCODE READER



Use a barcode reader within any software running on IBM XT/AT or compatible, running DOS 2.0 or greater.

Includes memory resident pop–up barcode printing software for any Epson compatible printers.

Dealer enquiries welcome.

These products available from:

MULTIVIEW COMPUTERS

1st Floor, 565 Willoughby Road
Willoughby N.S.W. (02) 958 2477

C++ FROM ZORTECH INC.

The change to a pure language

Now, C programmers can move over to C++ with Zortech C++ – the world's first 'true' C++ compiler for MS-DOS machines.

Zortech C++ is a 'true' compiler and fully conforms to Bjarne Stroustrup's specification as outlined in his book 'The C++ Programming Language'.

Previous implementations of C++ were actually 'translators' – only able to translate C++ source code into C. Of course, this was unacceptable due to the long translating and compiling times.

Now, C++ comes of age with the introduction of the world's first true C++ compiler – from Zortech!

■ ***Object Oriented Programming***
C++ is to C what Modula 2 is to Pascal. C++ brings 'classes' to C, so you can create separate modules that contain their own data and data-related operations. These 'classes' then become new types that can in turn be used to create further modules – this allows you to practically create your own language.

■ ***ANSI C Superset***
You don't have to throw away your existing C programs – C++ is a superset of ANSI C. Now, you can take your Microsoft C or Turbo C compatible programs and easily migrate to C++ to take full advantage of the new C++ features.

■ ***'Codeview' Compatible***
Zortech C++ is compatible with 'Codeview' – Microsoft's industry standard source code debugger.

■ ***Improved Program Structure***
As stated in 'The C++ Programming Language', by using C++ "It would not be unreasonable for a single person to cope with 25,000 lines of code".

■ ***Other benefits***
Here's just a few: Operator overloading, overloading function names, default arguments to functions and better type checking.

$199 without tax
$214.80 with tax

STEWART FIST

YOUR APPLE

About six months ago I wrote an enthusiastic short article on the Two-Blu card which converted your Apple IIe or GS into a very fast MS-DOS machine. Peter Sandy from Apple Australia had managed to get hold of a prototype and he let me have a play for a couple of days. It was going to cost $1000 and Imagineering was going to import it, so the rumours went.

Sadly, the Two-Blu card disappeared into the 'Land of Vapourware' and although I chased Apple contacts in the States *and* wrote to both the US exporter and the manufacturer, I wasn't able to get a card to keep. Apparently a few were sold, but then they disappeared.

Now the card has resurfaced as the PC Transporter from Applied Engineering (which makes the 'RAM' series of Apple cards – RamWorks, RamFactor, GS-RAM, RamKeeper and so on). I know it is the same card because the software credits the original Little Blue company.

The card is being bought into Australia by PowerTechnik of Killara, (02) 439 5488, and at $1500 (including tax) it isn't a cheap way into the MS-DOS world. When you add to this another $615 for the special MS-DOS TransDrive disk unit, it becomes downright expensive. I can buy a clone with two disk drives for less than the basic card! So, is it worth buying? Is it worth reviewing? Well! Yes...maybe!

For starters, it does a few things better and faster than a cheap IBM clone can do. And it lets you get double value out of your expenditure on Apple peripherals; you don't need a second printer, for instance, or another mouse. You can get double use out of your Apple 3½ inch disk drives, and if you've already invested in an Apple colour monitor, then you will have the equivalent of IBM's CGA (Colour Graphics Adapter) system.

So, if you intend to plug the card into a GS with a colour monitor, then the only fair price/performance comparison is with an IBM XT clone equipped with a CGA card, at least one 3½ inch disk drive, and Microsoft's mouse and you won't buy a unit like this for under $3000.

One other advantage which might not be so immediately apparent, is that you can swap from running your Apple GS as a ProDOS machine to running it in MS-DOS in seconds, without needing to pull plugs or throw switches. Simply put the Transporter software in your ProDoS drive and boot: the change is quick and automatic.

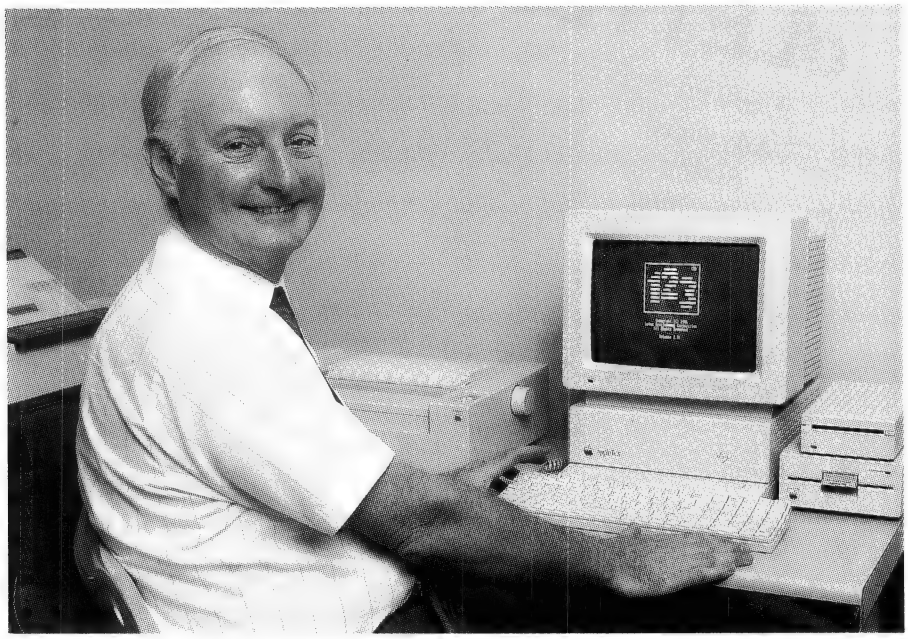


Figure 1. *Brian Robinson, manager, Powertechnik with a IIGS using the Transporter card – and running Lotus 1-2-3.*

So the real value of the card could be in the time it saves messing around with RS-232 cables and communications programs, and throwing switches and coupling wires (and cursing because nothing ever works the way it should theoretically).

If you are in the habit of transferring data between an Apple II format and MS-DOS this could be the best way to go. I suspect that file translation will be its major application. Let's have a look at the card in detail.

The Transporter Card

There are actually two cards in the package. The main Transporter card will fit any slot (except 3) on a II+, IIe or IIGS. This is a large card with its own RAM on board, and with an NEC V30 microprocessor (which is the equivalent of the 16-bit Intel 8086) running at 7.16 MHz.

You can buy PC Transporter with 256, 384, 512 or 640 Kbyte of user-RAM, in addition to the essential 128 Kbyte of card-RAM that can be used by Apple programs as a RAM-disk when you are not running MS-DOS, so there is a secondary benefit here as well. It all conforms to Apple's Memory Expansion Card protocol in the Apple mode.

The main Transporter card will also take an Intel 8087-2 maths co-processor if you need number-crunching ability, so it is a quite powerful machine.

The second card is a ColorSwitch unit which doesn't require a slot; it screws to the back plate. You will need this if you want to run the Apple colour monitor as an IBM CGA system. The Apple colour monitor uses analog video, whereas IBM is digital, and the ColorSwitch makes the input change automatically.

The IBM CGA standard needs 16 Kbyte of static RAM as a display buffer and it can provide either 320 *x* 200 pixels in four colours, or 640 *x* 200 in two. There are also a whole range of cables that come with the ColorSwitch unit to take into account the different permutations and combinations or Apples and monitor types, including the Sony Trinitron range.

With Transporter you will need at least two disk drives since there isn't any ROM aboard the card, and you boot it into MS-DOS with a software program running under ProDOS. As it boots from the ProDOS disk, it immediately looks for MS-DOS in a second drive, so two drives are a minimum. The ProDOS drive can be a 5¼ inch, 3½ inch Apple or UniDisk, or a hard disk.

COMPUTER CAPITOL PTY. LTD.

1st Floor, 533 Willoughby Rd.,
Willoughby 2068.
Phone: (02) 958 7977

Cornerstone: Page Displays for PCs and MACs

The Cornerstone Dual Page Display System for the PC

Diagonal Size: 19 inches
Orientation: Landscape
Resolution: 1600 x 1280 pixels (115 dots per inch)
Refresh Rate: 67 Hz non-interlaced, Flicker free
Text Mode: 96 characters x 40 or 80 lines
Grayscale: 2 or optional 4 bit planes, 4 or 16 levels
Hosts: IBM PC AT, XT, PS/2 Model 30, Compaq DESKPRO 386, or compatibles
I/O Slot: Single 8 or 16 bit
Emulation Supported: Hercules Graphics Adapter emulation in hardware including 720 x 348 monochrome graphics mode
Software Supported: WordPerfect; WordStar; Lotus 1-2-3; MS Windows 1.03 and 2.03 and Windows applications, like Aldus Pagemaker and Microsoft Excel; GEM and GEM applications; Ventura Publisher; AutoCAD; AutoShade, Publisher's Paintbrush, NeWS, XENIX. For a more complete software list, contact Cornerstone Technology.
Warranty: Two years standard. Extended warranty available.

ULTRA 30 MB Mono screen $1900	**WYSE 30MB** Mono $2200
WYSE 30MB AT-EGA $3990	**QUME LASER** 10 PPM Demo $2500
COLORADO Tape Back Ups 40MB Internal $600 40MB External $750	**QUATTRO** $249
HERCULES In Colour Card $430	**SIDEKICK PLUS** $249
BROTHER HR40 $1050	**PARADOX** CALL
DATA PRODUCTS LZR 2630 (Demo) 26 PPM Laser $13,000	**MONITORS** Mono 12" $160 14" $190 CGA $430
BROTHER M1209 $430	**MODEMS** Blitzer 12E $300 123E $350
DISKETTES Le Floppy $8 per box DYSAN $30 per box	**EPSON** CALL
SWITCH BOXES A-B $42	**ALL PRICES INCLUDE TAX**

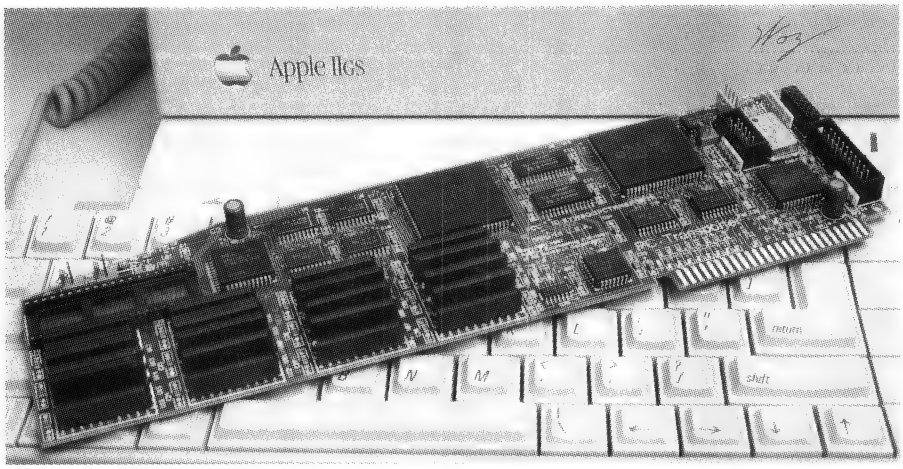


Figure 2. *The main Transporter card will fit any slot (except 3) on a II+, IIe or IIGS. It is a large card with its own RAM on board and an NEC V30 microprocessor running at 7.16 MHz.*

The second drive must be capable of handling MS-DOS, and this can be either –

a) A special TransDrive from Applied Engineering (single or dual 5¼ inch unit) which has a DB19 connector for daisy chaining;

b) or your Apple 3½ inch drive plugged into the card as a TransDrive unit. (You must then boot ProDOS from another conventional Apple drive.)

The TransDrive unit ($615 taxed from PowerTechnik) contains a decoding card that translates IBM drive connector pins to Apple Drive connector pins. Standard IBM drives can't make this translation, although you can use any standard IBM-type drive as a B: drive, chained out of a TransDrive unit. Alternatively, you can chain to an Apple 3½ inch as the B: drive.

You are able to substitute an Apple 3½ inch drive for the TransDrive unit as the first in the MS-DOS chain, because Apple designed this drive to handle both the Modified Frequency Modulation (MFM) encoding techniques used in the MS-DOS world, and Apple's own Group Code Recording (GCR) disk system. The translation is builtin. You can do everything with this drive except format an MS-DOS disk.

You can't substitute Apple's UniDisk 3.5 for the standard Apple 3½ inch drive on the MS-DOS side of the equation; however, you can use it on the ProDOS side. In this case, the UniDisk can be used to store programs and data generated on the MS-DOS side but it will not directly boot an IBM formatted disk.

In total, you can swing five usable drives on the system, and you can use all your Apple drives as de facto MS-DOS storage devices – and *vice versa*.

It will take you a good 15 minutes to install the card and configure it through its own control panel. You will need to copy the ProDOS boot disk and bring over files to read any installed Apple clock, handle the mouse and so on.

Portware

Behind the software is 'portware' which controls the interaction between the Transporter and the I/O devices – this must be pretty complex since the normal Apple system is used to handle all these peripherals.

The control panel also gives you a graphic translation of the Apple GS keyboard when used as a substitute for an IBM. Option 1, for instance, is the equivalent of the first function key on IBM's keyboard, and Option N is the equivalent of the NumLock key.

I guess you would get used to these key modifications after a while, but I found that I needed to constantly check with the graphic display in the control panel to find some of the keys used infrequently. The GS keyboard is an adequate – but not good – substitute for the IBM keyboard in MS-DOS.

You can plug an IBM keyboard directly into the PC Transporter card if you wish, and thereby disable the Apple keys. This is essential with the Apple II+, and highly desirable, I would guess, with the IIe. But, on the down-side... there goes another couple of hundred dollars!

So, how does it all run? Very, very well. I only had a couple of minor hassles in the couple of weeks I played with it. For starters, my colour monitor showed a deep pink tinge that couldn't be whitened out although PowerTechnik said that this was probably only a dirty monitor connection. Maybe!

For some reason, it also wouldn't read the directories on a couple of 3½ inch MS-DOS disks that I had around, but it seemed to run everything else and fast! I think it is very close to being up to IBM AT speed in many functions. Applied Engineering claims that it is three times as fast as 'the IBM XT.'

The file transfers between ProDOS and MS-DOS (either way) are lightening fast – this is where the card really excels. You simple choose a transfer utility, provide the file names and pathways as a single-line command (or by menu selection), then hit return. The files cross the O/S boundary before you can jump back in surprise!

It is hard to sum up a product like this because it is both excellent at what it does, yet expensive. If it retailed for $1000 or less, I think PowerTechnik would sell thousands. At $1500 plus, (probably) a TransDrive unit and (possibly) a keyboard, I think this approach is too expensive unless you've got a specific application, and that means regular file translations between Apple and IBM.

However, the 'cons' are important too. I am uncertain as to how 'compatible' PC Transporter is, and I wouldn't feel confident without a six month trial using plenty of programs. So if you are thinking of buying one, check it out carefully with your own software – it *does* come with a 15 day money back guarantee.

Secondly, it is important to remember that PC Transporter doesn't make your Apple into a fully-featured IBM clone. There are no IBM-type slots, for starters, and therefore you can't plug in IBM boosters and peripherals. So what you buy is what you are stuck with; the system can't grow or evolve.

To me this is the clincher. At $1500, I would opt for a clone and put up with the problems of cables and communications programs every time I needed to transfer files.

As for the maker's claim that you can save on desk space by having two machines in one! In a country with 3 million square miles and only 16 million people, I can't believe that an extra couple of feet of desktop space is all that important. □

Minicomp

Studioworks gives the designer the power and flexibility of a mainframe graphics system with the ease of a simple paint program.

- Creates images in 3 dimensions.
- Performs complex colour shading.
- Generates text in a multitude of fonts.
- Gives full-featured page make-up.
- Reproduces colour images on paper, film, 35m slides, 16 or 35mm film.
- Has animation and motion scripting for ¾″ and 1″ Video tape.
- Provides a total business graphics system.

Studioworks, the only system offering the most professional graphics capabilities on a personal computer.

Studioworks

For more information or a demonstration call
Minicomp 104-108 Mount Street North Sydney NSW 2060 (02) 9576800

ATLANTIS 286+ 80286 10 MHz

- 80286 12 MHz (Optional 80287-10)
- 1Mb RAM On Board Memory (Expandable to 16Mb)
- 1.2Mb TEAC Floppy Disk Drive
- 40Mb Hard Disk Drive
- Hard Disk/Floppy Disk Drive Controller
- Parallel Port
- Serial Port (Optional 2)
- Battery Backed Clock/Calendar
- Colour/Hercules/EGA/VGA/PGA Display
- 180 Watt Power Supply
- Mini at Case
- Front Panel Keylock/Reset and Turbo Switch
- Extended Keyboard with 101 Keys or 84 Keys AT Style
- MS-DOS 3.3A & GW-Basic

12 Months Warranty Backed by Atlantis International Pty Ltd
Assembled in Australia

from $1845.00

ATLANTIS XT TURBO 10 MHz

- 8088-2 10 MHz Motherboard
- 640K RAM Memory
- TEAC/NPH 360K Disk Drive
- Disk Drive Controller supports 2 Floppy Disks
- Serial Port Optional 2 RS232 Ports
- Parallel Port - Centronics with DB25 Connector
- Joystick Port
- Battery Backed Clock/Calendar
- Colour/Hercules/EGA/VGA/PGA/ Displays
- 180 Watt Power Supply
- Keyboard PC/XT/AT - 84 Key
- Small F/print Case with Front Keylock, Reset and Turbo
- MS-DOS 3.3A & GW-Basic

12 Months Warranty Backed by Atlantis International Pty Ltd
Assembled in Australia

from $1149.00

3½" Internal DISK DRIVES

Mitsubishi ½" 720K Drive/Steel Case/37 Pin Plug XT/AT Compatible	$179

ACCESSORIES

Keyboard Tactile 101 Keys. Switchable to PC/XT/AT	$132
Printer Cable	$15

MONITORS DATA-C

Multisync 14"	$900	DATA-C CGA	$420	Mouse Z NIX	$75
DATA-C EGA	$691	12" PAPER White	$158		

POWER SUPPLIES

Power Supplies 220W AT	$220
Power Supplies 180W AT	$185
Power Supplies 150W PC/XT	$125

CASES

AT/XT Case Fliptop	$120
AT Case	$170
Tower Case with 220W Power	$730

DISKETTE DRIVE MITSUBISHI

Diskette Drive 5.25" 1.2 MB (Reads/Writes 360K)	$171
Diskette Drive 3.5" 720 with 5¼"	$202
Diskette Drive 3.5" 1.44 MB with 5¼"	$202
Diskette Drive 5.25" 360K	$144

HARD DISK DRIVES

21 MB 5¼" Drive 65 MS Miniscribe	$417
21 MB 5¼" Drive 65 MS with Controller & Kit	$489
42 MB 5¼" Drive 61 MS	$511
42 MB 5¼" Drive 61 MS with Controller & Kit	$626
42 MB 5¼" Drive 28 MS	$936
42 MB 5¼" Drive 28 MS with Controller & Kit	$1080
71 MB 3½" Drive 26 MS	$1080
71 MB 3½" Drive 26 MS with Controller & Kit	$1230

BUY YOUR UPGRADES DIRECT AND SAVE

DISK CONTROLLER CARDS

Hard Disk (2X) Controller 8 Bit PC/XT	$151
Hard Disk (2X) Controller 16 Bit AT	$229
Hard Disk (2X) Controller 16 Bit AT (3X) Floppy Controller	$289

VIDEO CARDS

Mono, Hercules, Graphic Printer Port PC/XT/AT	$117
Colour Graphics, Printer Port PC/XT/AT	$112
GA, EGA, CGA, MGA, HGA, Multisync (Made in Aust), Double Scan PC	$299
EGA	$255
VGA, EGA, CGA, MGA, HGA	$499

MULTIFUNCTION CARDS

Parallel, Serial, Game Port 2 x 360K Zero K AT	$140
Clock/Calendar Card PC/XT	$55
Printer Port PC/XT	$46
RS232 Port PC/XT	$72
Printer, RS232 (2nd Optional) AT	$102

PROCESSOR BOARDS & MOTHER BOARDS

8088-CPU Boards Turbo 4.77 & 8 MHz Zero K	$159
8088-CPU Boards Turbo 4.77 & 10 MHz Zero K	$189
8088-CPU Boards Turbo 4.77 & 10 MHz 640 K	$659
286-CPU Board 0 wait, 8 & 10 MHz Zero K	$583
286-CPU Board 1MB RAM, 0 wait 8 & 10 MHz	$1332
386-CPU Board 2MB RAM on board, 0 wait 20 MHz	$4299

DISKETTES

"NO FRILLS" 3½" DISKETTES

Datalife 720K	$3.60
1.44MB	$8.39

5¼" DISKETTES

10 Brand 2S 2D 360K	$0.99
1.2MB	$3.50

ATLANTIS INTERNATIONAL COMPUTERS

ATLANTIS INTERNATIONAL PTY LTD

49 WADHAM PARADE, MT. WAVERLEY, VIC. 3149
PH.: (03) 277 3139, 277 7187
Bulletin Board: PH.: (03) 807 9514

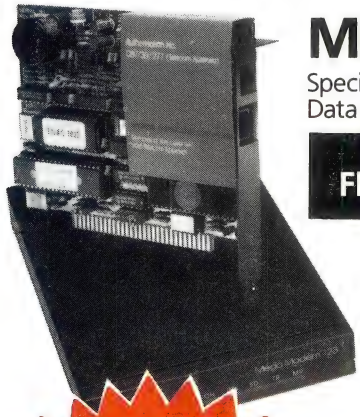
New Address for Atlantis Wholesale:
59d Glenvale Crescent, Mulgrave, Vic. 3170
PH.: (03) 561 1133

AVTEK DATA COMMUNICATIONS

QUALITY AUSTRALIAN MODEMS AT MANUFACTURERS' PRICES

NOW GET EVEN BETTER VALUE ON THESE OUTSTANDING MODEMS

Avtek, the longest established Australian modem manufacturer, now gives you a chance to get even better value when you buy. Purchase any one of our modems before November 31st and you can purchase a Cybersoft Gateway V3 High Performance Communications Software Package for ½ price @ $75.00. Just check the features and the prices of Avtek and you'll see why it's the modem chosen by more and more PC users.



MEGAMODEMS 12/123

Specifications: Data Standards — CCITTV.21, Bell 103, CCITTV.22, Bell 212.
Data rates — 300/300, 1200/1200 (model 123 1200/75 VIATEL).

FROM ~~$375~~ $325 (Inc. 12-month warranty) 'New Low Cost'

More compact and reliable than most and suitable for data transfer between PCs, on-line services, E-mail and all videotex facilities like VIATEL (Model 123 only). Available as a standalone RS232 model or as a plug-in true ½ card for IBM PCs and compatibles.

A fully automatic operation, HAYES-compatible smart modem.

½ PRICE CYBERSOFT V3 GATEWAY COMMUNICATIONS PACKAGE Only $75.00 WITH ANY MODEM PURCHASED BEFORE NOV. 31st.

MINIMODEM II

AN IDEAL FIRST MODEM!

Specifications: Data Standards — CCITTV.21 (300/300 baud full duplex). Data rates — CCITTV.23 (1200/75 baud).

VALUE AT ~~$199~~ $179

(Includes 3-month warranty) 'New Low Cost'

A highly reliable data communicator at a budget price. The compactly designed Minimodem II is supplied complete with Telecom-approved, push-button phone.

PHONE NOW FOR FAST DELIVERY. PH.: (02) 888 5333. MAIL ORDERS WELCOME. AVTEK, P.O. BOX 651, LANE COVE 2066.
30-DAY, NO-QUESTIONS-ASKED, MONEY-BACK GUARANTEE.

All Avtek modems are sold complete with power supply, instructions and telephone connections. Designed and built in Australia, service and technical support for modems is available direct from Avtek Data communcations.

MasterCard VISA

AVTEK DATA COMMUNICATIONS
(A Member of the NetComm Group of Companies)

Please send me further information and detailed brochures to:

Name _____

Address _____

_____ Postcode _____

Post to Avtek Data Communications, P.O. Box 651, LANE COVE 2066.

AV 003

TIM HARTNELL

YOUR AMSTRAD

In the column this month, we'll be looking at a way of solving copying hassles with a single disk machine and routines to create graphics windows.

Pat points out that the second window refuses to position correctly unless it runs twice (a strange bug?)!

Solving the single disk drive blues

Allen Barry from Yellow Rock, NSW, is an Amstrad PC owner with a single disk drive – and he knows the hassles that can cause.

'If you need to copy a portion of a disk's contents,' he writes, 'the continual swapping of disks in the correct order tends to get tedious.

Allen points out that the problem can be significantly reduced by using the PC's ramdisk utility. 'This feature can be accessed via the Desktop, in order to change the size of the ramdisk,' he says. 'Click the mouse button on the NVR.EXE icon. The Non-Volatile RAM Utility main menu will appear.

'To change the ramdisk to the desired size, all you have to do now in theory is follow the screen's instructions. I followed the instructions and made the copy. But when I returned to the Desktop, it wouldn't work!

'I didn't know how to reduce the ramdisk size, and so I managed to lock the system up. It was a Sunday afternoon, and I had no-one to call for assistance. In desperation, I removed the batteries to destroy the non-volatile RAM.'

Allen kept exploring and eventually discovered a simple and safe way to access the ramdisk.

'Boot up using MS-DOS disk 1, and then when the A> appears, replace the DOS disk with disk 3, the one containing the file NVR.EXE. You start this file by typing in NVR and pressing the Enter key.

'The size of the disk is determined by the amount of copying required. For example, one disk I had which was absolutely crammed with material needed a bit of rearranging in order to get the Basic programs copied to a separate disk. Work out how much space you think the files will occupy, and set the disk size accordingly. It is no problem to make an adjustment later if the need arises.

```
'WINDOWS1.BAS
'
GOSUB windowing
GOSUB demo
GOTO delay

LABEL demo
  FOR wnd= 1 TO 4
  STREAM #wnd
  BOX 50;50,8050,4950 COLOUR 2 WIDTH 5
  PRINT AT (5;2) "The designs are equal in input"
  PRINT AT (5;9) "The circles are at 4050;2500"
  col=10
  FOR r=500 TO 2000 STEP 500
   CIRCLE 4050;2500,r COLOUR col WIDTH 3
   col=col+1
  NEXT r
 NEXT wnd
RETURN

LABEL windowing
 CLOSE WINDOW 3
 CLOSE WINDOW 4
 WINDOW #1 SIZE 320,85
 SCREEN #1 GRAPHICS 320,85
 WINDOW #1 PLACE 0;110

 WINDOW #2 SIZE 320,85
 SCREEN #2 GRAPHICS 320,85
 WINDOW #2 PLACE 320;110

 OPEN #3 WINDOW 3
 WINDOW #3 SIZE 320,80
 SCREEN #3 GRAPHICS 320,80
 WINDOW #3 PLACE 0;1
 WINDOW #3 OPEN

 OPEN #4 WINDOW 4
 WINDOW #4 SIZE 320,80
 SCREEN #4 GRAPHICS 320,80
 WINDOW #4 PLACE 320;1
 WINDOW #4 OPEN
RETURN

LABEL delay
x=TIME                ' Gives time to look before resetting
WHILE TIME <x+2000
WEND
CLEAR RESET
END
```

***Listing 1.** This program, Windows1, sets up four graphics windows. The numbers are not equal, but if the bottom ones are made the same size as the top ones, they don't look right on the screen.*

'To use the ramdisk, insert the disk you wish to copy. In order to copy the Basic files from a disk, you type in –

```
A>copy *.bas c:
```

and then press the Enter key. C:, of course, is the ramdisk. Now to transfer the files to another, pre-formatted disk, enter –

```
C: (Enter)
```

You are now at the C> in the ramdisk drive. You can check its contents with the DIR command. 'To copy the files, insert the new disk and type –

```
copy *.bas a: (Enter)
```

After the copying has been completed, you return your ramdisk to its original size by replacing the disk in the drive with disk 3, and entering –

```
NVR (Enter)
```

Now reset the ramdisk to the 34 kilobytes the system requires, and you're set to continue.'

Thanks for that advice, Allen. A complimentary copy of The Amstrad PC Companion is being sent to you. This software package is provided for all those who send in suggestions on the PC which are used in this column.

Window routines

Pat Clark, from Gilles Plains in South Australia, has written some worthwhile Basic2 window routines. The first program, Windows1, sets up four graphics windows. As you can see, the numbers are not equal. But Pat found that if the bottom ones were made the same size as the top ones, they didn't look right on the screen. Also, the handbook indicates that fixed size graphics screens default to the standard 8000 by 5000 user co-ordinates, but the bottom two in this routine are about 500 wider.

The second program, Windows2.BAS, produces two vertical graphics windows. Pat points out that the second window refuses to position correctly unless it runs twice (a strange bug?)! It comes out the first time only if the windows have already been changed from their default positions by the programs.'

The final program, Windows4.BAS, is an example of a pop-up graphics window. Pat comments: 'I found arriving at the best size for the windows in these routines a bit fiddly, as they have to be defined in pixels, whereas everything else runs in user co-ordinates.'

Pat has also created some great random pattern programs to take advantage of the multiple windows, like one called Quadplot, which uses four graphics windows. 'Watching them is akin to watching fish in a tank,' Pat reports. 'Running a pattern during teabreak is very relaxing.' However, the listings of these graphics programs are far too long to include here. If you send me a formatted 5¼ inch disk, plus $1.00 for postage, I'll send you a copy of the programs, plus some other interesting stuff. Send it to Tim Hartnell, 34 Camp Street, Chelsea 3196 Victoria.

We'll be including Your Amstrad in future issues of the magazine. I'd be interested in hearing from any companies making hardware or software for any of the computers in the Amstrad range, for review in this column. As well, I'd be more than happy to share any of your discoveries, hints, tips, comments and programs with other users of the great Amstrad machines, along with details of any Amstrad specific user groups. Software suitable for your computer will be given to anyone who provides material which is used in the column. Please write to Your Amstrad, Tim Hartnell, *Your Computer*, PO Box 227, Waterloo 2015 NSW. □

```
' WINDOWS2.BAS

CLOSE WINDOW 3
CLOSE WINDOW 4
WINDOW #1 PLACE 325,11
WINDOW #1 SIZE 319,189
SCREEN #1 GRAPHICS 319,189
FOR runs=1 TO 2           ' The second window won't position first time
 WINDOW #2 SIZE 325,189
 SCREEN #2 GRAPHICS 325,189
 WINDOW #2 PLACE 0,11
NEXT

x=TIME          Gives time to look before resetting
WHILE TIME <x+500
WEND
CLEAR RESET
END
```

Listing 2. *Windows2.BAS produces two vertical graphics windows.*

```
' WINDOWS4.BAS

WINDOW #2 CLOSE
CLOSE WINDOW 3
CLOSE WINDOW 4
WINDOW #1 FULL ON

MOVE 2500;2000
PRINT "TO POP UP WINDOW PRESS CTRL-H"
WHILE INKEY$<>CHR$(8)    ' Waits for Ctrl-H before popping up
WEND
GOSUB pop_up

x=TIME              ' Gives time to look before resetting
WHILE TIME < x+500
WEND
CLEAR RESET
END

LABEL pop_up
  WINDOW #2 SIZE 260,80
  SCREEN #2 GRAPHICS 260,80
  WINDOW #2 PLACE 172;52
  WINDOW #2 OPEN
  STREAM #2
  MOVE 100;2500
  PRINT "PRESS ESC TO GO TO MAIN SCREEN"
 WHILE INKEY$<>CHR$(27)
 WEND
 CLOSE WINDOW 2
 STREAM #1  ' Return inputs to main screen
RETURN
```

Listing 3. *Windows4.BAS is an example of a pop-up graphics window.*

ROY HILL

THE FORTH COLUMN

Let's start this month by discussing the manner in which Forth is implemented on most systems, as well as several of the features that give Forth its speed and power.

Firstly, Forth is fairly easy transportable to any new processor that appears on the market. The reason for this is that there is a very small kernel of I/O routines for keyboard, video, and drives that are specific to an individual processor/computer. These routines typically occupy less than 2 kilobyte of code and written in the assembly language of the target computer. In porting from one processor/computer to another, it is only these routines that require modification. Most Forth implementations also include a machine code assembler, which I will discuss in detail in a later column. Any Forth words that are written using this assembler must also be re-coded into the mnemonics of any target processor.

The remainder of the Forth 'kernel' is usually written in Forth itself. This remaining kernel is totally transportable. C was also designed with these same features in mind.

Secondly, Forth used a technique called 'threading.' This means that each newly created word is linked to the previous word. This linking is implemented in a special address area within each word, called the 'link field address.' Once again, I will leave a discussion on exactly how this is accomplished to a later column. All words that are newly written in Forth, call previously defined words by referring to the address of the previous words. If you are getting the idea that this looks pretty much like subroutines, then you would be fairly close.

Forth is called a 'subroutine threaded code' type of language. There are also two different types of threading – direct threading (as used in Forth) and indirect threading (as in Hope). It is the feature that accounts for most of the speed of Forth – it is a language that is optimised for making calls to subroutines. The Novix chip (and its successor, the RTX2000 from Harris) takes this to its ultimate conclusion – the ability to enter and leave a subroutine in the space of one clock cycle.

Thirdly, Forth is designed for extreme compactness. A complete implementation for Forth usually occupies between 4 and 16 Kbyte. User added words may take this

Forth word

Last month I introduced some of the arithmetic words that Forth uses and gave some examples of integer calculations using these words. I also mentioned that I would provide a 'pseudo-floating point' calculation, based on integer arithmetic.

The source code for this is given in Figure 1, together with appropriate comments. Note the use of the stack operating words such as ROT, SWAP and DUP. I must point out that there are far more elegant solutions to the word F/ than I have provided, but the word is merely designed to illustrate a principle. I will be only too glad to examine other's contributions to the 'pseudo-floating point' topic.

I must also stress that the accuracy of the result is very closely tied to the number of digits in the numerator and denominator and also to the limits of 8-bit Forth. Experiment with this word and make some modifications to it. Another very handy word to overcome this lack of accuracy is */- a combined multiply and divide, which allows the intermediate storage of a 16-bit product, prior to the division step. The word is entered *on one line* as follows –

```
: F/ DUP ROT SWAP /MOD 3 .R ." ."
                1000 * 1+ SWAP / . CR ;
```

Note the use of the word '1+' – incrementing is a very important feature of any language and the word '1+' has been specially defined to allow this.

The next word that I would like to discuss is EMIT. In the same way that the period is useD to print a number on the top of the stack to the screen, EMIT is used to send an ASCII character (placed on the stack) to the screen. For example –

```
99 EMIT
```

– will put the letter 'c' on the screen at the current cursor position (99 decimal is the ASCII code for 'c'). Note that both EMIT and period are installation dependent words (they rely on cursor positioning routines to put the character in the correct position). EMIT is the Forth equivalent of PRINT CHR$(x) in Basic, and ." abcde' is the equivalent of PRINT "abcde" and the period '.' is the equivalent of PRINT A, where 'A' is a declared variable. Forth also has declared variables and I will discuss them in the next column.

Program: Pseudo Floating Point **By:** HILL **Date:** Aug '88

R	Stack (Top→)	FORTH F/	Comment
	n_1 n_2	DUP	2 Copies
	n_1 n_2 n_3	ROT	3RD → TOP
	n_2 n_3 n_1	SWAP	1 ↔ 2
	n_2 n_1 n_3	/MOD	QUOT + REM
	n_2 R Q	3	
		.R	Print Value on Top
	n_2 R	." . "	Print a Dot
		1000	Multiply Rem by
	n_2 R 1000	*	1000 for xtra place
	n_2 1000 R	1+	Round Off
	n_2 1000 R+1	SWAP	1 ↔ 2
	1000 R+1 n_2	/	Divide
	n_3	.	Print Dec. Places
		CR	Carriage Return
		;	END

Figure 1. *The source code for a pseudo-floating point calculation based on integer arithmetic.*

up to 30 to 40 Kbyte, but even this is fairly trivial when compared to the size of most conventional compilers and the size of the object code they produce. There are several versions of Forth available that occupy *huge* amounts of space (ABUNDANCE for the IBM is one – it runs to over a megabyte), but this is usually because of all the added 'goodies' that they contain such as on-line databases, editors, and shadow screens. Most Forth programmers who are concerned with space limitations can be exceedingly inventive when it comes to pruning their program down.

They can remove all of the unnecessary header code to produce 'headerless' object code, which is usually transferred to an EPROM. They can also re-compile the complete system, omitting those words that are unnecessary to the application. Savings in space of up to 60 per cent are often possible using these techniques.

Finally, Forth is designed for speed – the combination of subroutine threaded code, the use of a stack (rather than named variables and the use of integer only arithmetic), all make for an extremely fast language. Before anyone starts to howl about integer only arithmetic, let me remind them of two three things –

A complete implementation for Forth usually occupies between 4 and 16 Kbyte.

1) There are very few commercial programs that require floating point maths. Sure, the users of these programs manipulate floating point data, but the programs themselves don't need to be written using FP. As a typical example, consider the database package Savvy: it can handle all sorts of FP data, but the program itself is written in Forth.

2) Lots of good commercial programs have been written using integer only arithmetic. Consider the original Apple II – it came on the scene with only integer Basic available. A large number of fine programs were written in integer Basic for the Apple II.

3) For those who really *must have* floating point arithmetic, most available Forth packages (including the Public Domain ones) have FP extensions available.

With all of the above points considered, why is it that Forth is not a more popular language? The answer to the question seems to be that to program in Forth requires a fair investment in time, in order to come to terms with its unique structure. It also requires a major re-think in the way we traditionally write programs.

My first high level language was Fortran. Having learnt this, it was easy to teach myself the likes of Basic, Pascal and Prolog. Not so with Forth. It required throwing everything out and starting from scratch. It also required extreme discipline in coding Forth programs – documentation was an absolute necessity during the course of the coding. Otherwise, the completed program would have been indecipherable after 6 months had passed.

It is possible to write almost self-documenting Forth programs that are totally clear in their meaning. It is also possible to write totally incomprehensible code. Sure, this is possible in any language, but in Forth, a sloppy programmer becomes a disaster, rather than an inconvenience.

In my next column, I will discuss Charles Moore's current version of Forth – cmForth and how it operates on the Novix chip.

Forth finds life inside a dome

THREE DIMENSIONAL SOUND is generated inside a geodesic dome through 16 loudspeakers. The audience is surrounded by it as it swirls around the high curved walls of the dome. At the same time, moving colour images are projected onto a huge screen above the heads of the audience. It is all generated in real-time using Macintoshes and MIDI for the sound, and Amigas for the graphics.

Floating Exceptions is a team of composers and visual artists headed by David Worrall who teaches composition at the Canberra School of Art. Other members of the team include Stuart Ramsden, Virginia Read, Peter Bailey, Steve Ellison, and Kimmo. They performed in Canberra in August, then moved the dome to the lawns of the Seymour Centre in Sydney for the New Dimensions series of new music concerts in September, sponsored by OTC. The dome has a steel frame with a 7 metre radius. Suspended inside this structure is a fabric membrane, and the loudspeakers are suspended at intersections of the frame. The dome is used by the team because it is so portable, and to keep the rain off their equipment.

Life Dreaming, a composition in sound, light and space was performed by *Floating Exceptions* as part of the New Directions program. Stuart Ramsden programmed the computer graphics segment using Forth on an Amiga 2000.

Stuart Ramsden attended Swinburne Institute's one year post-graduate course in computer animation in 1987. His animated film, 'Symbiosis Samba' won the Institute's award for the best soundtrack, and was selected for presentation at Siggraph in the USA.

Using Forth on an Amiga 2000, he developed a program for real-time control of the graphics display which is projected on to a large screen using a video projector. The Forth program is used in conjunction with the audio composers in the team to explore John Horton Conway's cellular automata game of Life, extending the automata into synchronised visual and aural domains.

Such is Life

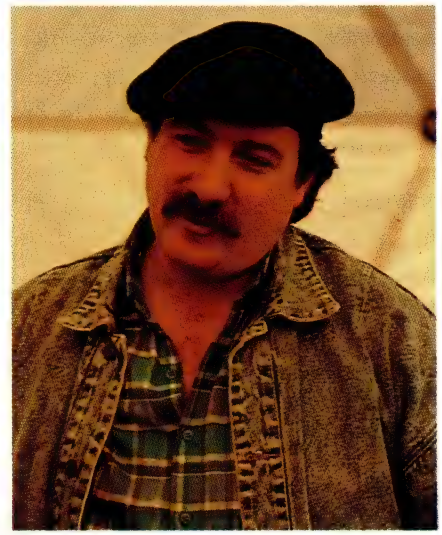
The concept of cellular automata was first developed in the 1950's by John Von Neumann who explored the possibility that self reproduction was possible solely through chance combinations, within a context of physics and logic. This performance explores the behavior of cellular automata as models for defining the ways in which cells interact with their neighbours.

If you are confused at this point, it may help to imagine the screen display with the Forth program running. There are many small shapes, or cells, moving around in a more or less organic fashion, a bit like swimming amoeba as viewed under a microscope. (If you haven't 'experienced' Life in action, see Tim Hartnell's 'Is there Life on Amstrad?' in our May '88 issue.)

The geodesic dome on the lawns of the Seymour Centre. The dome was chosen for portability, strength, and its shape, which is well suited to three dimensional sound.

Different shapes represent different cell types (with names such as blinkers and traffic lights) as defined by the program. The cells interact, following the cellular automation algorithms. They have collisions, move towards or away from each other and change with time. The cells can also be born or die, sustain themselves for the next generation, suffer badly from things like overcrowding, and can even die of loneliness (life is pretty tough inside a computer!).

The analogy with life is extended to traditional Aboriginal concepts of the dreaming, regarded as a complex network of meaning with its own inter-relations, the movement of beings following their own dreaming, and the notion of life as process. Life Dreaming is a large scale work that is performed in approximately 30 minutes, but it could just go on forever and ever . . . □



David Worrall, Director, Floating Exceptions – a group combining electroacoustic music with computer animation.

Stuart Ramsden, right, with Peter Bailey. Stuart programmed the graphics segment using Forth on an Amiga.

DISCWARE

IBM SOFTWARE

Coda	$350
dBase 4	$call
Freelance Plus	$715
Harvard Graphics	$595
Sidekick Plus	$275
Magician	$290
Microsoft Excell	$799
Mirror with Viatel	$115
Quattro	$299
Paradox 2	$895
Supercalc	$575
Lotus 123	$649
Symphony	$975
Timeline 3	$890
Turbo Pascal 3	$130
Turbo Basic	$130
Turbo C	$130
Turbo Toolboxes	$130
Turbo Prolog	$130
Ventura Publisher	$call
Word Perfect 5	$599
Wordstar	$450

IBM ADD ONS

Hyperformance 12.5	$1290
Intel 80287	$299
Intel 80387	$799
Hypertec boards	$call
3.5 1.44MB drives	$350

PRINTERS

Fujitsu range	$call
Epson range	$call
Toshiba range	$call
Brother range	$call
NEC *new* range	$call

MODEMS

NetComm AutoModems	$call
NetComm SmartModems	$call
NetComm In/Modems	$call

LASERS

Ultra Laser	$call
Toshiba PageLaser	$call
AST Postscript	$call
Epson GQ3500	$2890
NEC Silentwriter	$call

STORAGE SYSTEMS

Seagate 30MB RLL	$490
Seagate 45MB voice coil	$890
Miniscribe 42MB	$675
Microscience 44MB v coil	$990
Caching HD controler	$2350

Framework 3 **$890**

Pagemaker 3 **$call**

Lotus Agenda **$590**

J-Laser Plus AT **$950**

Fujitsu DL 3400 **$1249**

Intel Above Board 286 **$870**

Plus Hardcard 40 **$1450**

FoxBase + Multiuser **$650**

Intel 386PC **$1490**

Fujitsu DL 2600 **$1875**

NEC Multisync II **$999**

Vega VGA **$475**

Complete Fax **$990**

Hyperace 286 Plus **$625**

Vega VRAM **$call**

Diconix 150 ink jet **$call**

DISCWARE (02) 212-6933

150 Broadway, Broadway, NSW 2007. FAX: 211-4065 TLX: AA23509

ALL PRICES INCLUDE SALES TAX. AVAILABILITY MAY BE LIMITED AT PRICES ADVERTISED. PRICES APPLY TO STOCK HELD AS AT 25/5/88.

DISCWARE

THE DISCWARE AT-286 – $3095

CPU:	80286, 8/10 MHz
RAM:	640 KB
ROM:	IBM AT compatible.
DISK STORAGE:	1.2 MB Floppy Drive, 40 MB Hard Disk.
EXPANSION:	6 x 16 bit slots. 2 x 8 bit slots.
INPUT/OUTPUT:	Parallel/Serial.
POWER:	225 watt power supply.
OPTIONS INC:	Mono or Colour Card. Key Lock 12 months warranty.

LIMITED QUANTITY AVAILABLE AT THIS PRICE

THE DISCWARE AT-386 $save

CPU:	80386
RAM:	1 MB
ROM:	Phoenix
DISK:	1.2 MB
STORAGE:	70 MB
EXPANSION:	2 x 32, 4 x 16, 2 x 8
INPUT/OUTPUT:	Serial/Parallel 101 keyboard 12 month warranty

TOSHIBA T3200/T5100

MODEL	T3200	T5100
CPU:	286 @ 12MHz	386 @ 16 MHz
RAM:	1 MB	2 MB
DISK STORAGE:	720KB + 40MB	1.44MB + 40MB
INPUT/OUTPUT:	Ser/Par/Exp/2 slots	Ser/Par/Exp

INTEL INBOARD 386/PC

Work faster & smarter: upgrade your 8088 based PC to a 386 based machine for a fraction of a price!
Single slot plug-in board with 16 MHz 80386 CPU and 1 MB of 0 wait state RAM, 80387 socket, 5 year Intel warranty.
Multitask your PC with the Intel Inboard/386 now!

ALR 286

MODEL:	286/10	286/12
CPU:	286 @ 10 MHz	286 @ 12 MHz
RAM:	2 MB	1 MB
DISK STORAGE:	1.2 + 40 MB	1.2 + 70 MB

Zenith 286 **$call**

Zenith 14" Flat Technology Monitor

- Latest release in CRT Display technology.
- Perfectly FLAT, reflection-free video tube
- "Flat tension mask" development breakthrough.
- Supports VGA & EGA, Hercules/MDA/CGA Modes. Modes displayed at 31.5KHz Scan frequency.
- Resolution: 640 (H) x 480 (V) – Up to 95% less glare than conventional CRTs.

PHONE NOW FOR DEMONSTRATION AND PRICE

NEC MULTISYNC II

The latest high resolution monitor from NEC: compatible with PS/2, VGA, EGA, PGA, CGA
Automatically scans 15.5-35 kHz & 50-80 Hz
Available now at Australia's lowest price!

ALR 386

MODEL:	386/16	386/20
CPU:	386 @ 16 MHz	386 @ 20 MHz
RAM:	1 MB	1 MB
DISK STORAGE:	1.2 + 80 MB	1.2 + 150 MB

AST Premium 286 **$call**

Toshiba T3200 **$call**

ALR Flexcache 386 **$call**

AST Premium 386 **$call**

Wyse 386 **$call**

Toshiba T5100 **$call**

Olivetti M28 20MB mono **$3290**

Everex Step 386 **$call**

Kaypro 286 40MB **$2995**

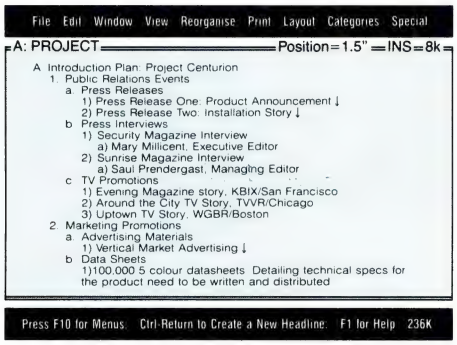
Wyse 286 8MHz 1MB mono **$3590**

DISCWARE (02) 212-6933

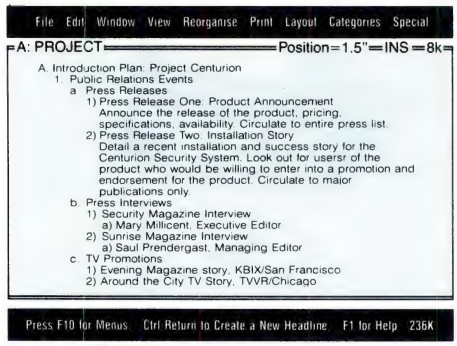
150 Broadway, Broadway, NSW 2007. FAX: 211-4065 TLX: AA23509

ALL PRICES INCLUDE SALES TAX. AVAILABILITY MAY BE LIMITED AT PRICES ADVERTISED. PRICES APPLY TO STOCK HELD AS AT 14/6/88.

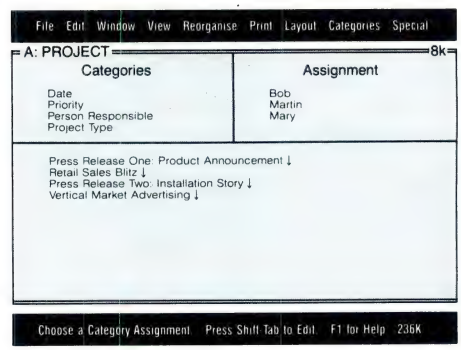
Manage the big picture? Get Grandview



USE OUTLINE VIEW –
to rough out the task.



USE DOCUMENT VIEW –
to write, edit and report



USE CATEGORY VIEW –
to manage the task; to organise your data in your own way.

When you're working on

- Planning Events
- Tracking their Progress
- Marketing Plans
- Proposals
- Business Reports
- Delegating Tasks
- Writing and Research
- Preparing Scripts and Speeches
- Organising Schedules
- Putting together Agendas
- Searching for information

use Grandview.

Grandview is a new class of software, for people who have to manage a wide variety of activities, people or information. It works, all at the same time, as your wordprocessor, outliner and database to help with all those "mind crowding" jobs you do every day.

It's flexible, so you can enter information the way that suits you, then call up real organising power. Three views give you the insight you need to handle the most complicated task. Stand back and view the big picture, then zoom in to see the tiny details. Or gather particular things you need for a job. All on your screen in seconds.

Grandview integrates:

- **A flexible outliner.** Enter schedules, tasks, deadlines, research topics. It's a great way to get your ideas or tasks down and turn them into organised, action-oriented information.
- **A full-featured, easy to use, word-processor.** Whether you want to write a memo or prepare a laser printed proposal, it does a terrific job. A 100,000 word spelling checker is built in. Turn any part of your outline and associated text into presentation quality reports, letters, or summaries. Laser and Postcript™ laser printers are fully supported.
- **An organising Category View.** For instant cross referencing. Assign categories, like person, project, due date, whatever you need.

If you're a manager or researcher, you'll find it easy to delegate or filter information with Grandview's Category View. For example, Category View lets you gather detailed responsibility assignments from throughout an outline and show them all together on screen.

You can assign information as you enter it in the outline. Or let Grandview make assignments automatically for you. View information by project, task, person, due date, priority, department, or any category you choose.

Find out how Grandview works for you. Send in the coupon for our "Trial Size" offer. This is no "demo disk". We'll send you a complete Grandview, minus Save and Print functions, plus helpful example files. It's like finding 20 years of management experience on a disk!

p.c extras

PO Box 136 Redfern NSW 2016
Phone (02) 319 2155
Fax: (02) 698 9926
Melbourne: Phone (03) 486 1999
PC Extras are the authorised Australasian distributors for Grandview.

Please send me my Trial Size copy of Grandview and the name of my nearest dealer.

NAME _____

ADDRESS _____

_____ POSTCODE _____

$10.00 enclosed (cheque/money order)

RETURN TO: PC EXTRAS, PO BOX 136 REDFERN, 2016

IAN ALLEN

YOUR COMMODORE

What's in a name?

The naming of the C64 is a bit misleading, I've often thought. If the '64' part refers to addressable memory, it should have been called the C88, because that's how much RAM and ROM is actually inside the box – 65 kilobytes of RAM, 8 Kbyte of ROM for the Basic Interpreter, 8 Kbyte for the Kernal ROM, 4 Kbyte of Character ROM, plus another 4 Kbyte of addresses for the SID, VIC and CIA chips. On the other hand, if the name refers to the available RAM, it should have been called the C38, because that's how much space you have to fit in both your program, its data and variables.

Of course, most of the confusion is due to the fact that the C64's 6510 processor has special switching routines which enable it to use the same addresses to refer to physically different blocks. That's what makes it possible to access 88 Kbyte of memory when you have only 64 Kbyte of addresses – you simply switch different banks in and out as you need them.

Bank switching on the 128

The C128 takes the same principle much further; in the process it gives you close to a full 64 Kbyte of RAM to store programs, plus another 64 Kbyte for data and program variables. All of this memory is available to the Basic programmer, so the 128 is accurately named. The only catch is that if you have a short Basic program, you don't normally get access to the unused portion of program memory for storing data. Still, compared to the C64, the 128 offers oodles of memory, and you don't have to use any special switches to access it because Basic 7.0 does all of the housekeeping for you.

It's not quite so easy for a machine language programmer. In fact, the architecture can be quite confusing, enough to put a lot of people off. It did me for a while, but eventually I got into it and found it's actually quite easy to work with. The key to the 128 is in understanding how the memory management system works and how to switch different blocks of memory in and out.

Mastering the 128's memory

The first thing to do is get the terminology right. Although Basic 7.0 has a Bank command offering 16 so-called 'banks', it's really quite misleading. The fact is that the C128 only has two banks of RAM: RAM (0) and ROM (1), each of 64 Kbyte. There are vacant slots inside the machine for a further two; if you installed them, these would be RAM (2) and RAM (3), but in the standard arrangement, RAM (0) and RAM (1) are the only usable memory banks.

The key to the 128 is in understanding how the memory management system works and how to switch different blocks of memory in and out.

That's all you need to know about 'banks'. Apart from that you can forget the term bank altogether – it's too misleading. What the 128's memory management system is all about is configuration of memory. The processor can only address 64 Kbyte of memory at one time, but that 64 Kbyte isn't just one fixed chunk. It's actually an assembly of different slices of possible memories. All 128 Kbyte of RAM and a lot more of ROM is available and usable, but not at the same time. All we have to do is to make sure we can access the slices we need, when we want them. The best part is that we can change the combination of configuration of the slices as we go along. To make things even easier, there is just one memory location we have to worry about: $FF00. It's the master switch which controls the memory configuration. It's simply a matter of storing in there the right number for the configuration you want, and it's not hard to work out the numbers, either. Each of the bits

Bit	Controls	Setting
0	$DC00 - $DFFF	0 = I/O ROM 1 = Character ROM
1	$4000 - $7FFF	0 = Basic ROM 1 = RAM
2 & 3	$8000 - $BFFF	00 = Basic ROM 01 = Internal Function ROM 10 = External Function ROM 11 = RAM
4 & 5	$C000 - $FFFF (not $D000 - $DFFF)	00 = Kernal ROM 01 = Internal Function ROM 10 = External Function ROM 11 = RAM
6 & 7	Which RAM block?	00 = RAM (0) 01 = RAM (1) 10 = RAM (2) 11 = RAM (3)

Table 1. *The contents of $FF00 for the C128.*

$FF00 Poke Value	Addresses whose first hex digits are: 0123	4567	89AB	CEF	D
00	RAM (0)	ROM	ROM	ROM	I/O
01	RAM (0)	ROM	ROM	ROM	C/GEN
0E	RAM (0)	RAM (0)	RAM (0)	ROM	I/O
0F	RAM (0)	RAM (0)	RAM (0)	ROM	C/GEN
3E	RAM (0)	RAM (0)	RAM (0)	RAM (0)	I/O
3F	RAM (0)	RAM (0)	RAM (0)	RAM (0)	C/GEN
40	RAM (1)	ROM	ROM	ROM	I/O
41	RAM (1)	ROM	ROM	ROM	C/GEN
4E	RAM (1)	RAM (1)	RAM (1)	ROM	I/O
4F	RAM (1)	RAM (1)	RAM (1)	ROM	C/GEN
7E	RAM (1)	RAM (1)	RAM (1)	RAM (1)	I/O
7F	RAM (1)	RAM (1)	RAM (1)	RAM (1)	C/GEN

Table 2. *The usable 128 memory configurations. Note that in all configurations, the first 1 Kbyte of memory comes from RAM (0).*

in $FF00 is a switch controlling a slice of memory. To work out what values you need, simply check which bits need to be on and convert from binary into decimal.

As you can see from Table 1, there are 256 different combinations, but not all of them are useful for a standard 128. We don't have any internal or external function ROM and no RAM (2) or RAM (3). If we take those options out, plus the ones that leave you with only half of Basic, we are left with 12 usable configurations – see Table 2.

Of the 12, $0E and $4E are the most ideal for machine language applications. You have plenty of RAM to play with, and the all important Kernal and Input/Output ROMS are still in place. The configurations are identical except the first employs RAM (0) and the second, RAM (1). There is nothing to stop you using both $0E and $4E in the same program as it's just a matter of changing the configuration number. If you want to pass data between RAM (0) and RAM (1), the Kernal provides special routines to load, store, jump, compare and JSE with.

The next most useful configuration is $00. This is the standard setup when the computer is first powered up, and is useful when you want to combine machine language with a Basic program. You should always set this configuration before returning to Basic.

When combining machine language with Basic, it's important to ensure that Basic doesn't clobber some of the memory that you intend for machine language. There are a couple of ways to avoid this. If your code is relatively small, the easiest is to put the code into one of the places reserved from Basic by the system. If you're not using sprites, you could use the locations between 3584 and 4095 in RAM (0); or if your code is bigger, try the area reserved for foreign language and function keys between 4864 and 7167, also in RAM (0).

If you need a lot of space, the safest way is to actually reserve a slice of memory from Basic. You can do this by altering the pointer at location 57 and 58 ($39 and $3A). This tells Basic the highest address it can use in RAM (1), so by making it lower you can reserve as much space as you need. If you do chose this method, do it at the very beginning of your Basic code and perform a CLR immediately afterward. This will wipe all existing variables and tidy everything up. Something like –

```
POKE 58, PEEK(58)-4:CLR
```

– should do the trick; it reserves 1 Kbyte at the top of RAM for machine language.

That's all you really need to know about 128 memory management. There are other, much more sophisticated tricks within the 128's operating system, but in 99 per cent of the applications these simple principles should be more than adequate. □

It's a miracle!

FREE

SOFTWARE!

IBM PC
Apple II
Mac

DETAILS IN OUR ***NEW*** CATALOGUE of cut-price & **FREE SOFTWARE**

For *your* copy, ring **(03) 648 1191** at *any* time, and be ready to tell our receptionist your name, address and make of computer.

Or write: Tim Hartnell, Interface Publications (Aust.) Pty. Ltd., Room Y4, 34 Camp St., Chelsea, Vic., 3196

FREE READERS' CLASSIFIEDS

IBM owners
IBM owners wishing to correspond and swap wide range of Public Domain software. Contact Bill Ligakis, 21 Walana Cres., Wagga Wagga 2650 NSW.

AUS-SIG
The pick of Public Domain software at a good price. We do fill our disks. We don't take double page ads for which we pay. Free membership and catalog. (07) 263 3652 or PO Box 22, Zillmere 4034 Queensland.

Swap
Amiga owner wants to swap Public Domain software. Write to – Michael, PO Box 419, Hawthorn 3122 Victoria. Also 3½ inch disks at $30 each.

Mouse
Genius Mouse; never used. Includes Dr Halo III software, menu maker, two manuals, mouse pocket, mouse pad. $140, AWNI (02) 682 6861.

Modem
Hayes compatible Avtek Megamodem. 1200 + 300 full duplex and Viatel. $300 ono. Phone Mark on (064) 53 2544.

For sale
IBM JX – ideal for home education. 1 *x* 5¼ inch (bootable), 2 *x* 3½ inch;10 Mbyte disk drive; joy-stick, all ports, 512 Kbyte RAM; clock, colour monitor. $2300 ($4000 new). Phone (08) 271 0514.

Hints
Hints wanted for any Apple adventure. Your experience will benefit others. Send to: T. Venning, 73 Sydenham Rd, Doubleview 6018 WA.

Software
Apple software: Captain Goodnight $40; Sundog 2.0 $40; Pinball Construction Set $40; Visicalc $65. All originals. T. Venning, 73 Sydenham Rd, Doubleview 6018 WA.

Ribbons reinked
Printer ribbons reinked. Typical charges: DMPs $3.50; Epson EX800 $4.50; Star NL 10 $5.00; Amust $4.50. Prices include return postage. Quotes given. Windsor Software, PO Box 408, Lutwyche 4030; (07) 356 1759.

Games Pack #1
50 PC Games Pack #1 costs $25. Games include Backgammon, Yahtzee, Monopoly, Cavequest, Afghanwar, Temple, Pinball, Spacewar, Original Adventure, Mutant, Solitaire, Golf, Jumpjoe, Baby, Maze, Hopper, Castle, Intercept, Bandit, Striker Subchase, Flight, Poker, Biorhythm, rockets and so on. Most games allow play against the computer or human opponent. Utility and Applications Pack also available. Many other Public Domain disks, at just $3.50 per disk, full of program(s). For information send SSAE. New Rainbow Publications, PO Box 286, Broadmeadow 2292.

Microbee
Increase memory from 64 to 128 Kbyte. Gain ramdisk and cursor keys. $70 or $80 (depending on serial number) plus transport costs. FGP Computers, Cabbage Tree Rd, Grose Vale 2753. Phone (045) 72 1254 (ah).

Printer buffer
New 64-256 Kbyte printer buffer design release. Version 4.0 and REV G boards now available. Double-sided PCB, EPROM and instructions $39. Optional additions include 2 by 7 SEG LED front panel display off percentage full, 1 to 99 copies select, 3 polled computer inputs, printer switches, computer switches and serial converter boards. For a free catalog send a 39 cent stamp to Don McKenzie, 29 Ellesmere Cres., Tullamarine 3043 Victoria.

DEALERS, distributors, mail-order houses and other commercial organizations or individuals who have a message to spread can take advantage of our Market Directory – small ads to help those searching for outlets, services and equipment. For details contact *Your Computer* on (02) 693 6626 or write to PO Box 227, Waterloo 2017 NSW. DISPLAY ADVERTISEMENTS (50 mm deep *x* 60 mm wide) in the Market Directory are $125 per insertion if finished artwork is supplied (Set and Makeup is $40 extra for the first insertion only). Payment must accompany copy. Closing date is 6 weeks prior to the month of publication.

FREE CLASSIFIEDS are for readers only, not commercial organisations. The first 20 words are accepted free of charge with a charge of 20 cents for each additional word. Good quality black-and-white prints may be included for a charge of $10 each. Multiple classifieds in one issue are treated and charged as singles.
COMMERCIAL ORGANISATIONS can place classifieds for a charge of 35 cents per word (minimum charge $10). Black-and-white photographs may be included for a charge of $20 each.
PRINT OR TYPE your ad clearly and legibly, double-spaced, and separately include your name, address and phone number for checking purposes, even if these are not to be included in the ad.
Any payment due must accompany the copy.

MARKET DIRECTORY

R & B SOFTWARE
P.O. Box 168, Melbourne Airport.

MOUSE CLOCK – A PRODOS Compatible, software driven, on screen clock for your Apple //c.

THE FINANCIAL COMPANION – A Financial Utility for calculating loans, mortgages, superannuation, investments, etc. For Apple // and I.B.M.

JACKPOT – An on-screen simulation of a Poker Machine. The odds are very similar to the real thing. For Apple // and I.B.M.

ALL THE ABOVE AND MORE TO COME AT THE LOW PRICE OF $19.95.

COMING SOON

PRO-CAD – a CAD design system for designing custom made, single and double sided printed circuit boards. Including full "Auto-routing" and several sizes of print-out. All this for only $79.95! For Apple //' Series only.

These programs may be purchased at your computer store or by mail from
R & B SOFTWARE, P.O. Box 168, MELBOURNE AIRPORT. VIC. 3045.
for only $19.95 plus $2.00 post and handling.

COMPUTER BOOKS

Over 2500 book titles for the hobbyist and professional.
Ask for our free catalogue.
Call or send $5 for Disc 5¼" IBM

Machine Language P.O. Box 36, Brooklyn Pk. S.A. 5032.

(08) 353 4679

HARDWARE AT DISCOUNT PRICES

20MB HARD DISK WITH CONTROLLER	$ 480
30MB HARD DISK WITH CONTROLLER	$ 520
40MB HARD DISK WITH CONTROLLER	$ 590
80MB VOICE COIL HARD DISK	$1050
360K CHINNON FLOPPY DRIVE	$ 145
1.2MB CHINNON FLOPPY DRIVE	$ 185
EGA CARD	$ 250
FAX CARD	$ 795
2400BD MODEM	$ 420
1200BD MODEM	$ 220
AT MOTHERBOARDS (12MHZ)	$ 500
XT MOTHERBOARDS (10MHZ)	$ 140
AT 2 SERIAL 1 PRINTER PORT	$ 85
MD-700 EGA MONITOR	$ 680
MD-11 MULTISYNC MONITOR	$ 840
MD-3 CGA MONITOR	$ 495

COMPANION COMPUTERS
Factory 3/12 Florence St, Burwood, 3125.
Ph: (03) 288 3835. Fax: (03) 288 8116

LETTERS TO THE EDITOR

We are happy to receive your comments and, if they are of interest to other readers, publish them. Letters will only be considered for publication if they include your name and address, although we can withhold such details from publishing on request. Note that we reserve the right to (and probably will) edit all letters for the sake of brevity, clarity or accuracy.

SUBSCRIPTIONS

Standard 12-issue rate within Australia: $42. Standard 24-issue rate within Australia: $79.80. Surface rate for New Zealand and Papua New Guinea: $51.80; airmail rate: $57. Rates for other countries on application. All overseas rates quoted are to be paid in Australian dollars. Allow up to eight weeks for subscription processing.

BACK COPIES

Back copies of *Your Computer* are available from The Federal Publishing Co, PO Box 227, Waterloo 2017 at A$4.00 each, including postage for Australia and New Zealand. We will supply photostat copies of articles where a back issue is not available, at the single-magazine price for each feature copied. A special service is offered for Tutorials: see below.

TUTORIALS

All Parts of Tutorials published within the last 2 years are available as photocopies for a charge of $0.50 per Part plus $4.00 for postage and handling within Australia (overseas postage additional). Please identify the Tutorial by its complete name and specify the Parts by number or the issue of publication. All but the latest of our Tutorials are listed in our 5-Year Index, published with our July 1986 issue.

READERS' ENQUIRIES

We will make every effort to answer readers' written enquiries, if accompanied by a stamped, self-addressed envelope, although staff shortages and deadline pressures may cause delays. Please include your telephone number(s) with any enquiry. Phone enquiries not related to subscriptions, readers' advertisements, or other 'service information' cannot be accepted.

COPYRIGHT

All material appearing in *Your Computer* magazine is copyright and cannot be reproduced in part or in full, by any means, without the written permission of the Publisher or Managing Editor. Computer clubs and schools can, however, apply for restricted permanent reproduction rights for non-commercial, limited-circulation use (for example, newsletters and class instruction). Given that it sometimes takes us a while to answer such requests, you can consider that restricted permanent rights apply in these cases from the day you send in your letter, and will later be confirmed (or withdrawn) by our reply.

LIABILITY

Although it is policy to check all material used in *Your Computer* for accuracy, usefulness and suitability, no warranty, either expressed or implied, is offered for any losses due to the use of any material from this magazine.

EDITORIAL CONTRIBUTIONS

Contributions to *Your Computer* are welcomed and will be given every consideration. Although the greatest care will be exercised with contributions, no responsibility can be accepted for the safety or return of any letters, manuscripts, photographs or other materials supplied to *Your Computer* magazine. If return is desired, you should include a stamped, self-addressed envelope. If return is critical – say it's something you can't afford to lose – then don't send it; we *are* careful, but we're not perfect. Please read these notes carefully to get an idea of the style and format we prefer.

All Contributions: should include your name, address, and home and office phone numbers (in case we need to check details). Each page of your submission, and any material sent with it, should also carry your name.

Contributions by Telephone: Contributors who have modems and suitable software (in the MODEM7/YAM mould – see our stories on Christensen Protocols in the May and June 1983 issues) can arrange direct transfer to our computers through our Bulletin Board system, which is on-line 24 hours a day, seven days a week. Contact our office by phone for details on transferring material in this way.

Contributions on Disk: Contributions can be accepted in most disk formats, although some have to be converted outside our offices, which will add to the (often lengthy) delay between receipt and acknowledgment. The preferred medium is IBM standard format single-sided, single-density, 20 cm CP/M disks or IBM PC-DOS minifloppies. We can also handle, in-office, most soft-sectored 13 cm disks, thanks to PC-Alien – so unless you have a particularly strange format, send it on disk straight from your machine. Please pack them extremely carefully if posting and label all disks with your name, address and phone number.

Listings: Unless it is absolutely impossible, we want listings produced on the computer. This reduces the risk of error – if the computer typed it, the computer probably accepted it. Print listings with a dark – preferably new – ribbon on white paper, and try to format the output to a narrow (40 characters) width. If they can't be produced on a printer, borrow a good typewriter – hand-written material is likely to sit around the office for a year before someone can find time to type it all out for you! Please provide an account of what the program does, how it works and so on. Any comments on the program should refer to the address, line number or label rather than to a page number. Any comments on modifying the program to work on other machines will be appreciated. Try to include a printout of at least part of a sample run if possible.

Style: All items should be typed (or printed) and double-spaced on plain white paper. We will only accept original copies – no photostats. Include your name, address, telephone number and the date on the first page of your manuscript (all manuscript pages should have your surname and page number in the top right-hand corner). Be clear and concise, and keep jargon and adjectives to a minimum. □

AD INDEX

Abacus 119
Advanced Peripherals 138,139
Ann Court Com. Serv. 129
Atlantis Int'l 146,147
ATS 103
Automation Ice Co. 6
AutoDesk Australia ..... OBC
Avtek 148
CC Data 38
Choice Marketing 23
Computer Capitol 143
Custom Made Software 65
Discware 154,155
DSE 46,47
Federal Marketing 66,67,98,99
Freesoft Int'l 89
IDT 105
Interface Publications 158
Keen 105
Kenelec 118
Living Image 45
Mace Software 32
Maestro 62
Manaccom 121
Meta5 123
MicroDOS 57
Micro-Educational 58,59
Micromart 40
Microsales 10,11
Minicomp 117,140,145
Multiview 141
NetComm 3
Pactronics 92
PC Access 78
PC Extras 156
Peripheral Systems ..... IBC
President 30,31
RCS Design 13
Ribbons, Rolls & Printers 129
Ritronics 42,43
Rust Media 161
Sancom 41
Sarwax 8
Select Software 126
SME 133
Software Express 116
Solid Software 15
TCG ..... IFC
The Computer Factory 60
Typequick 81
Unisystems 97
Utilico 13
Vapourware 100
Wave-Onic 14

This box can hold over 18 million bits of information!

IT COSTS QUITE A BIT LESS THAN YOU'D EXPECT!

Information and computer disk storage has never been approached so sensibly before! Before the revolutionary XIDEX FLEXIBLE DISK-KIT that is.

DATA AND DISK STORAGE IN ONE!

It's such a simple idea, but it took Xidex to think of it. Instead of buying diskettes, throwing away the storage box, then buying a disk filing box – you can now buy your computer disks and storage box in one and you'll save heaps!

INTRODUCTORY OFFER!

For a limited time only, you'll save nearly 50% off the recommended retail price! That makes the new XIDEX FLEXIBLE DISK-KIT the easiest business decision you'll ever have to make.

XIDEX®
TIMEWORKS®

LOOK WHAT'S INSIDE:

- 50 XIDEX DISKETTES Xidex 5.25" double sided/double density diskettes are world renowned for their high quality, extraordinary wear life statistics and ultra low disk drive head wear.
- DISKETTE STORAGE BOX Made from high impact-resistant plastic and featuring lockable transparent lid for safety and easy recognition. With capacity for 50 x 5.25" diskettes. It comes with dividers for easy filing.
- BONUS TIMEWORKS SOFTWARE DATA MANAGER PC software – everything you need for Filing and Record keeping. You can design your own customized data base and generate professional data reports. Includes Report Writer, Label Maker and Graphics!

EXCEPTIONAL VALUE!

ONLY

$149

SAVE $136

LIMITED TIME ONLY!

AVAILABLE THROUGH ALL AUTHORIZED XIDEX OUTLETS INCLUDING NATIONALLY: MYERS, DICK SMITH AND BLUE CHIP STORES

VICTORIA:
ULTRAPHASE, ROBERTS OFFICE SUPPLIES, COMPUTER OFFICE SUPPLIES, SOTEC
NEW SOUTH WALES
THE RIBBON & DISK CO., WORDEXPRESS

QUEENSLAND:
CHANDLERS STORES, PICK & PAY, CONSIDERING COMPUTERS, D.K. ELECTRONICS
KAYE & ASSOCIATES

SOUTH AUSTRALIA:
EMCOR TRADING (08) 371 1244
WESTERN AUSTRALIA:
GRAPHIC (09) 227 6777
ACT: DATAFLEX (062) 47 2322

RUST MEDIA PTY LIMITED (XIDEX WHOLESALE) 79 DICKSON AVENUE ARTARMON N.S.W. 2064.
SYDNEY (02) 437 5777 MELBOURNE (03) 696 3600 BRISBANE (07) 394 8325

MICHEAL BURLACE

CURSORY GLANCE

Many hardware and software companies in the US are using computers as on-line assistants which deal with a lot of problems faced by their clients. This allows callers to be filtered to the appropriate support person or kept away from them if it is a simple thing such as turning the printer on or on-line.

A pre-recorded voice asks a set of standard questions and the caller responds by pressing the appropriate buttons on their phone. This routes them to the next stage and so on. If the problem has not been solved when they get to the end of the line of questions, there is a person to deal with the problem or with them. Unless the on-line assistant is particularly well designed, it may need an artificial intelligence-equipped counseling program as well. Many people are very frustrated when they start a call and would be at screaming point in a few minutes if the computer didn't fix things. It can be a tough job for a human, let alone a piece of silicon. Future versions will probably handle simple spoken English such as digits, 'yes' and 'no', and will just ignore comments such as 'Of course the printer is turned on! What do you think I am?'.

Most people with a technical problem are more interested in getting the answer than in whether they are talking to a human instead of a computer. Even a lousy digitized voice would beat those lousy digitized versions of Westminster bells or Greensleeves. The system makes a copy of all phone-in sessions so support staff can keep tabs on what's happening and what's not being dealt with satisfactorily. All in all it could be an improvement in many ways.

Now, if we could just get the railways and Telecom to use the system we could save millions of person hours a week – ours as well as theirs.

■ From the Now I've Heard Everything Department comes the Talking Boomerang. It's not a silly idea, especially if you happen to be blind. Yes, it's for people who can't see and want to take part in outdoor sports. Instead of hand-eye co-ordination you would need hand-ear co-ordination. It doesn't talk (yet), it just bleeps, but who knows what will happen in the future. 'A little to your left, down a bit, not that much, left, left, Yes! Ah, it's good to be back in your arms again!' There's also one for people who want to

throw boomerangs at night (and catch them again) – it has lights. Perhaps they could just use the bleeping one and wear a blindfold – put themselves in a blind person's shoes. All this could start a revival of that dreadful 60s song under a modified name: 'My boomerang won't talk back'.

■ When voice recognition is normal in computers and we reduce our dependence on keyboards, what will training be like? Instead of hands on will it be lips on or vocal cords on?

■ The Overseas Telecommunications Commission (OTC) took over the services of various cable organisations including one provided by Amalgamated Wireless Australasia (AWA). In the early days of international communications it cost a week's wages and took many hours to send a telegram to Britain. Part of the reason was the low speed of transmission and the high number of repeater stations.

Each station had at least one person on duty who took in the message from one direction, wrote it down and retransmitted it. Each telegram would go through many hands and ears before arriving on your desk. So they couldn't afford too many errors in transmission or translation to and from Morse. Operators were allowed no more than one error a month if they were to get their annual pay rise. Find a computer-controlled telegram system with a similar accuracy level. So much for human error.

■ Richard Nixon said of several candidates in this year's USA presidential election: 'Jackson is a poet, Cuomo is a poet, Dukakis is a word processor.' He could have said worse things about Dukakis, after all, Nixon was brought down by a tape recorder. Who is he saving that label for? Then again, no tape recorder should really wear the responsibility, because Tricky Dicky did it all himself with the help of some 'Plumbers' and electronic bugs.

■ 'The paperless office will arrive about the same time as the paperless toilet,' according to Amy Wohl. She is a computer consultant, mover, shaker and general commentator who is heavily involved in Comdex in her home of the USA and here. No doubt the office and toilet will be as user-friendly as each other. The idea of an electronic toilet is fascinating, though perhaps not suitable for this column, so we will just glance at it cursorily and look the other way.

BOOTSTRAP: Sony released its Walkman some years ago, then its Diskman and a few months back its Videoman. It brought portability and quality to the cassette, the compact disk and the video, respectively. It was thought that the next significant portable piece of high-tech would be a still camera using video technology and taking the ill-fated models of a few years ago to commercial success.

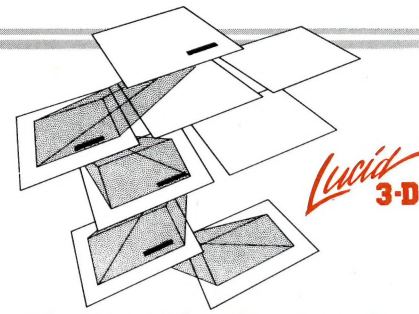
However, I have just received news from a friend in Japan with contacts high in the Japanese technology companies: they have another item up their sleeves, the Scentman. It comes with two nose plugs and can be piggy-backed onto any other XXman. This allows you to cart around the smells of the flowers you miss so much in your office or the country you yearn for in your city high-rise home.

Somehow I don't think it will be as much of a communal machine as the Walkman. 'Hey, get a noseful of this,' doesn't have quite the same appeal as 'Hey, get an earful of this.' But then again, if you pick your friends . . .

With some farmyard sounds on your Walkman you can be back there with the rustic memories of your holidays or childhood in your ears and nose. Or you can go the whole hog and smell the pigpen while you watch the porkers on the video and hear them snorting and grunting in full stereo. Ah, roll on the Eatman. □

Everyone says "It's the best there is."

Any cell can contain a complete other spreadsheet that you can access with a single key.



"The Best idea I've seen for a spreadsheet in years"
Jim Seymour, Columnist, PC Magazine, PC Week

Don't take our word for it. Use Lucid 3-D for 60 days. Return it for a full refund if not completely satisfied.

Lucid is as simple as the pictures show. And you don't have to write formulas to do that. All you do is look at the other file, navigating through easy, point and shoot directories. When you come back up (with one key) the link is made automatically for you.

Everything about Lucid works that way. Users say "*It is so intuitive that I really don't need a manual.*" That's because we use something we call a visual command menu. Jim Seymour, the noted PC columnist, talking about Lucid in a recent article said, "*If there ever was an interface idea so good it ought to be stolen and widely used, this is it.*"

Memory Resident

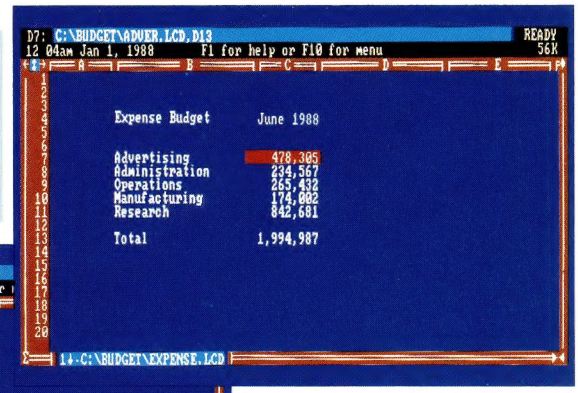
You can pop Lucid up instantly while working in your word processor or any other program. You can cut anything on the screen and paste it right into Lucid, or cut anything from a Lucid worksheet and paste into the application below. You can even run Lucid on top of 1-2-3 if you like, and cut and paste information from one to the other, including formulas.

Notepad Behind Every Cell

Another 3-D feature is that any cell can also contain a multiple page note window that you instantly access with a single keystroke. You can write notes, memos or letters that relate to your work, save them as individual files and even print them separately or with your spreadsheet.

Other Features

Lucid has over 100 innovations that cause users to say it is the best of all the spreadsheet offerings! Things like: **Speed** - background, minimal and visible recalc. **Macros** - learning macros, autoexecute macros, macros work between spreadsheets, user defined macro menus. **Mouseability** - total Mac-like mouse access, but easy keyboard control as well. **Color or Mono** - 17 user controlled color displays. **Audit** - six displays and printouts. **Windows** - multiple sheets on screen at same time. Multiple views of the same sheet. Pop-up windows of function formulas, range names, favorite labels, macro names, filenames, even a calculator. All let you select and insert right into your spreadsheet. All windows (even notes) resize and move where you want them. **Cut and Copy** - between spreadsheets, documents and between sessions. **Help** - press F1 anywhere, you get help specific to what you are doing.



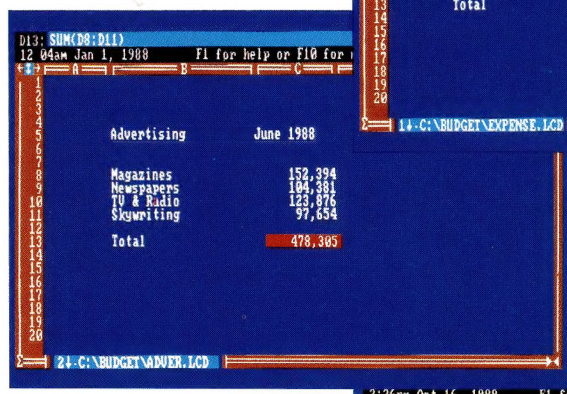


Fig. 1. Let's get the detail on those ad costs, just move the widebar to that cell and press one key (grey +).

Fig. 2. Here we are instantly. Notice the lower left corner showing we are on level 2. Grey – takes you back. There is no limit to the levels you can go. Move right down to transaction level if you like.

Co-Winner of the 1987 PC Magazine Award for Technical Excellence
The other winner: Microsoft's Excel

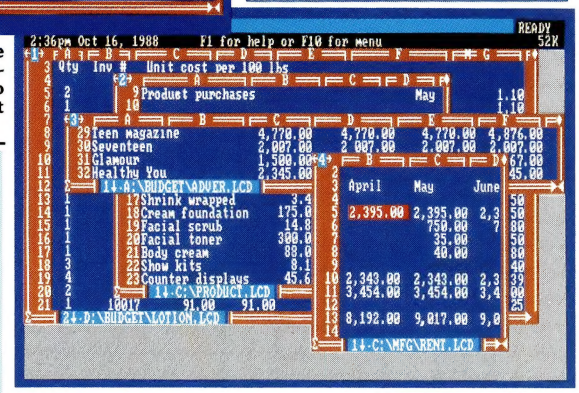


Fig. 3. Of course, Lucid does multiple windows. Notice, you can simultaneously open windows in different directories, different drives, even down as many 3-D levels as you like. No one else can do that.

Masterwork

Lucid is more than a bag of features. It is a masterwork. The overall feel is tight and polished. In fact, Paul Somerson, executive editor of PC *Magazine*, used one word to describe it, "*Slick*".

PCSG has built an excellent reputation as a developmental laboratory. Now those who have worked with Lucid 3-D tell us "*you have done it again. This is software everyone should have.*"

Even if you don't plan to abandon 1-2-3, Lucid makes sense. Files are converted between them with ease so there's not an interoffice compatibility problem. This means you can have the power and fun of Lucid 3-D, without having to upset your present systems.

Peripheral Systems

Unit 9/4 Campbell St, Artarmon 2064
Ph: (02) 437 6255 Fax: (02) 439 1773

Lucid 3-D

Exceptional spreadsheet for the IBM PC, PS and Compatibles.

Makers of LIGHTNING™ disk speed up software, and BREAKthru 286 Accelerator Board.

AVAILABLE FROM:

W.A.	**(09) 481-1565**
S.A./N.T.	**(08) 42-6791**

©COPYRIGHT 1987 PERSONAL COMPUTER SUPPORT GROUP, INC.

TAILOR-MADE CAD.

Compared to AutoCAD, the others just don't measure up.

AutoCAD, the fast and accurate computer-aided design software from Autodesk, turns your personal computer into an electronic drawing board.

But AutoCAD's real power is in its flexibility.

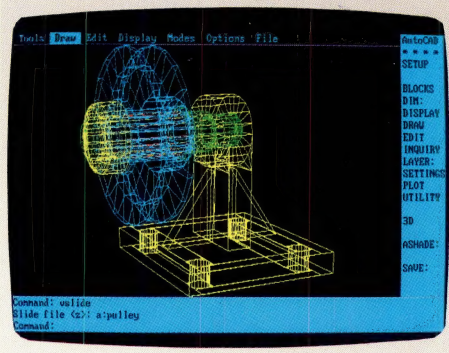
AutoCAD's open 'architecture' allows you to customise the way it responds, thus tailoring the package to suit your working style.

AutoCAD's embedded programming language, 'AutoLISP' gives you the power to automate design routines and interface to over 450 application programs, including more than 55 developed in Australia.

AutoCAD drawings can even be changed with other applications software, databases and mainframe CAD systems.

AutoCAD support is second to none.

A highly-trained 'Authorised AutoCAD Dealer' network offers



professional advice, qualified training and ongoing technical support. In the interest of protecting your investment . . . remember . . . only a Dealer 'Authorised' by Autodesk can provide future upgrades to your AutoCAD system. But there's more.

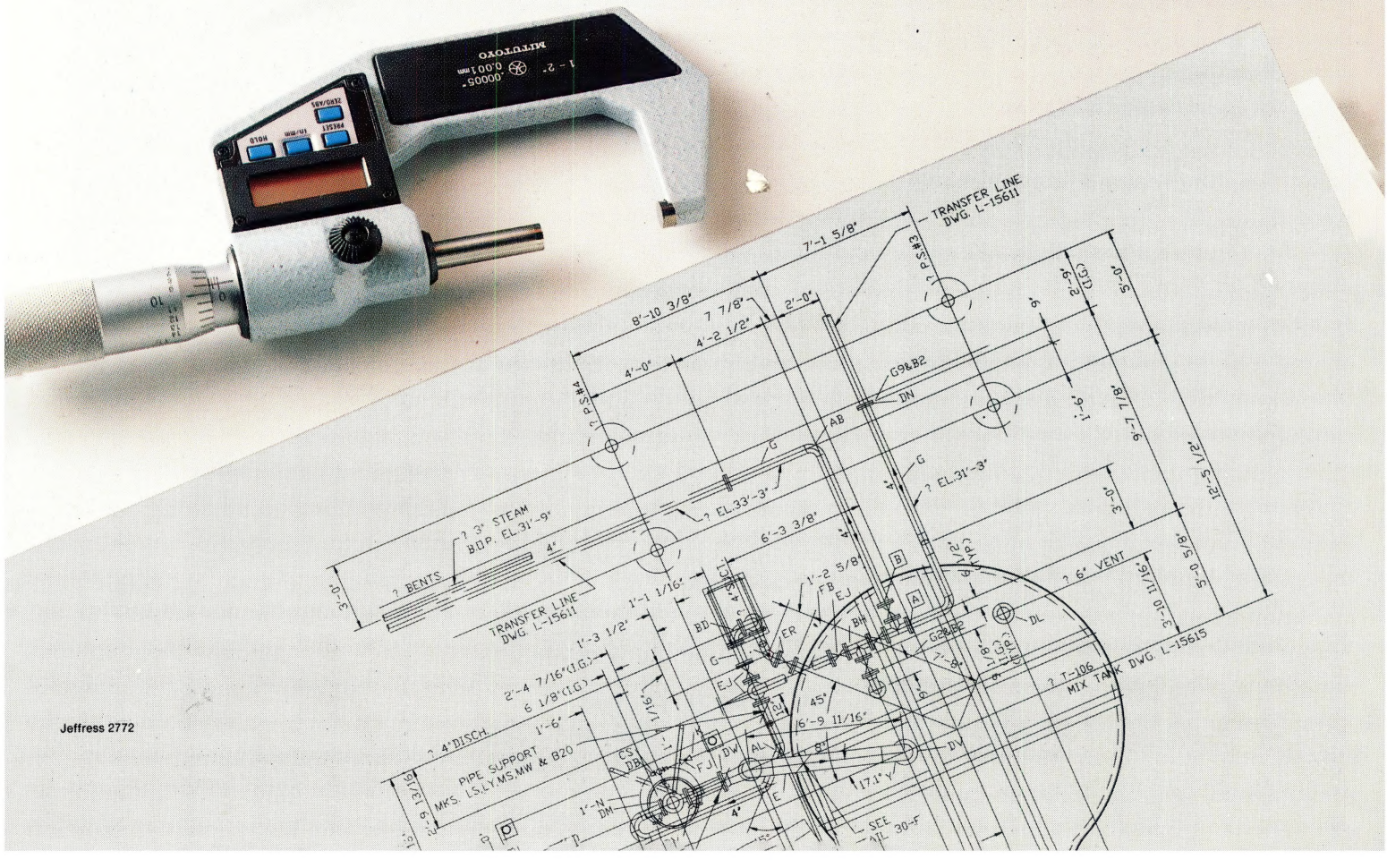
Authorised Training Centres, user groups, newsletters, conferences, application programs, and even two dedicated magazines, are all effective tools which contribute to your productive use of AutoCAD.

With over 110,000 users worldwide, including 2,800 in Australia, AutoCAD is now the standard for all CAD systems.

Your success is made to measure with AutoCAD.

AUTODESK
AUSTRALIA PTY LTD

For further information contact your Authorised AutoCAD Dealer or phone Autodesk Australia on (03) 429 9888 for the name of the Dealer near you.



Jeffress 2772